

20-21

HELMINTHOLOGICAL ABSTRACTS

incorporating
BIBLIOGRAPHY OF HELMINTHOLOGY

For the Year 1951



COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

Winches Farm Drive, Hatfield Road,
St. Albans, England

August 1951

Digitized by the Internet Archive
in 2024

HELMINTHOLOGICAL ABSTRACTS

Vol. 20, Part 1

1951

PRINCIPAL CONTENTS

GENERAL SUBJECTS

- Anthelmintics, 4a, 8b, 8d, 9a, 9b, 10c, 12f, 25d, 25g, 25h, 34a, 37a, 41a, 41k, 41n, 48a, 52n, 52 o, 53a, 55a, 55b, 55c, 55f, 55g, 55h.
- Bionomics, 27c, 27j.
- Control, 9b, 13a, 24c, 39a, 40a, 41d, 41e.
- Histology, 41 l.
- Life-Histories, 6a, 15a, 16d, 18a, 20a, 41i, 42a, 52f.
- Morphology, 41i, 41 l.
- Nematicides (plant eelworm), 13a, 38a, 38f, 38h, 38i, 41c, 41e, 43a, 44a.
- Physiology & Metabolism, 27e, 27k, 27 o, 35a.
- Technique, 12a, 31b, 35f, 51b, 52 l.
- Treatment, 48a.

HOST DISTRIBUTION

Animals of Economic Importance

- Domestic animals, 21a.
- Equines, 41h.
- Horse, 24a, 48a, 48b.
- Cattle, 8a, 20a, 23b, 24c, 36a, 41n.
- Sheep, 7b, 8b, 15a, 24b, 36a, 36c, 37a, 41a, 54b, 55d.
- Goat, 9a.
- Deer, 14a, 23a.
- Poultry, 5a, 40a.
- Dog, 6b, 8c, 10c, 25f, 36b, 41k, 53a, 54a, 55a, 55b, 55c, 55f, 55g, 55h.
- Cat, 41k, 55a, 55b.
- Rat, 10a, 35b.
- Mouse, 27c, 52h, 52i.
- Laboratory animals, 4b, 16d.
- Fur-bearing animals, 9c.

Man, 4a, 4d, 6b, 9b, 10c, 11b, 12c, 12e, 12f, 17a, 22a, 25d, 25e, 25g, 25h, 28a, 33a, 34a, 41g, 46a, 50a, 52a, 52b, 52d, 52 o, 52p, 52q, 52r, 52s, 54d.

Other Vertebrate Hosts

- Mammals, 1a, 9c, 12a, 12b, 15b, 27f, 41m, 41 o, 46b, 52m, 54c.
- Birds, 6e, 9e, 27d, 27g, 27h, 27p, 41p, 42a, 46c.
- Fishes, 10b, 16a, 16b, 27i, 27m, 41f, 42b, 45a.

Plants, 2a, 2b, 7a, 19a, 35g, 38b, 38d, 38f, 38g, 38h, 38j, 39a, 39b, 41j, 43a, 44a, 49a.

Free-living Eelworms, 6o.

SYSTEMATICS, NEW SPECIES, etc.

Trematoda, 12b, 41f, 41 o, 42a, 42b.
Cestoda, 1a, 27f, 27g, 27i, 27m, 27p.
Nematoda, 6c, 16a, 16b, 23a, 41h, 41j, 41m, 46d.
Acanthocephala, 27h, 45a.
Hirudinea, 56a.
Nomenclature, 41h.

GEOGRAPHICAL DISTRIBUTION

EUROPE

Britain, 7b, 50a, 56a.
France, 6e, 25f.
Germany, 9a.
Holland, 49a.
Spain, 46c.

AFRICA, 16

Belgian Congo, 1a, 12d, 33a, 52f.
Cameroons, 52m.
Kenya, 20a.
Morocco, 12a.
Southern Rhodesia, 52i.
Uganda, 52e, 52p, 52q.

ASIA

East Indies, 52a, 52b.
India, 21a, 22a, 23a, 23b.
Philippines, 4a.
Saudi Arabia, 17a.
Syria, 17a.

AUSTRALASIA

Australia, 2a, 2b, 8c.

PACIFIC ISLANDS

Hawaii, 43a.
New Guinea, 52s.
Samoa, 41g.
Solomon Islands, 52s.

NORTH AMERICA, 16a, 27d, 42a.

Alaska, 27h, 41m.
Canada, 15b, 16b.
U.S.A., 14a, 24a, 24b, 24c, 27d,
39a, 41j, 42b, 54d.

WEST INDIES, 11b.

SOUTH AMERICA

Argentina, 46b.
Chile, 10a, 10c.

COMMONWEALTH AGRICULTURAL BUREAUX

JOINT PUBLICATION No. 12

PHENOTHIAZINE 1942-46 : A REVIEW AND BIBLIOGRAPHY

*By J. Tweedale Edwards, M.R.C.V.S., and The Commonwealth Bureau
of Agricultural Parasitology (Helminthology)*

November, 1947. Price 4s. od. post free

HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY
FOR THE YEAR 1951

Vol. 20, Part 1

1—Acta Tropica. Basle.

- a. BAER, J. G. & FAIN, A., 1951.—“Cestodes nouveaux du Congo Belge.” 8 (1), 59–63.

(1a) *Bertiella congolensis* n.sp. occurred in the monkeys *Colobus polycomus angolensis* and *C. p. adolfi-friederici*. The length of the whole worm was 450 mm. The large size of the cirrus pouch and the small number of testes (65 to 90) distinguish it from *B. studeri* and *B. mucronata*. *Taenia brachyacantha* n.sp., collected from *Poecilogle albinucha* in the Ruanda-Urundi, is characterized by the extremely small size of the hooks. The uterus does not branch as in other species of *Taenia* but resembles that of *Echinococcus*. The whole worm measures 60–70 mm. in length. The genital pores alternate irregularly. The scolex has two rings of hooks numbering, in all, 54. There is very little difference in size between the large and small hooks. Baer's earlier description of *Hymenolepis dodecacantha* is extended and a table sets out the characters of the four species of *Hymenolepis* with 10–13 hooks which occur in insectivores. R.T.L.

2—Agricultural Gazette of New South Wales.

- a. ANON., 1951.—“Root diseases and crown rot of carnations.” 62 (1), 37–38.
b. ANON., 1951.—“New plant diseases.” 62 (3), 147–148.

(2a) Root rot due to nematodes is one of the chief causes of loss in carnations in New South Wales and is particularly serious in light, sandy, warm soils. R.T.L.

(2b) The occurrence of *Heterodera marioni* in *Sida rhombifolia* (Paddy's lucerne) in New South Wales is reported for the first time. R.T.L.

3—American Journal of Hygiene.

- a. WATTS, N. P. & McCONNELL, K. P., 1951.—“Effect of polonium²¹⁰ and selenium⁷⁵ in experimental *Schistosoma mansoni* infection in mice.” 53 (1), 11–16.

(3a) *Schistosoma mansoni* in experimentally infected mice is not killed or damaged by polonium²¹⁰ or selenium⁷⁵. In view of the difficulty of obtaining high concentrations of radio-active material in the lower forms of animal life the therapeutic use of radio-active substances is not promising. R.T.L.

4—American Journal of Tropical Medicine.

- a. HUNTER, III, G. W., DILLAHUNT, J. A., FAUST, E. C., MODIC, J. L., CONNELLAN, J. D., BENNETT, H. J. & INGALLS, Jr., J. W., 1951.—“The diagnosis of schistosomiasis japonica. IV. Studies on schistosomiasis japonica in an Australian Air Force unit.” 31 (1), 50–56.
b. STIREWALT, M. A., KUNTZ, R. E. & EVANS, A. S., 1951.—“The relative susceptibilities of the commonly-used laboratory mammals to infection by *Schistosoma mansoni*.” 31 (1), 57–82.
c. TUCKER, H. A., 1951.—“Hydatid disease at the Los Angeles County Hospital, 1936–1948; with a report of first autochthonous case from California.” 31 (1), 83–89.
d. BEAVER, P. C., 1951.—“Hemoglobin determination in hookworm disease case-finding.” 31 (1), 90–97.

* Titles so marked throughout this number have not been seen in the original.

- e. ACKERT, J. E. & LIGENZOWSKI, F. L., 1951.—“Chemical control of larvae of the dog hookworm *Ancylostoma caninum* (Ercolani).” 31 (2), 259-266.

(4a) A unit of an Australian Air Force squadron had been exposed to infection with *Schistosoma japonicum* on Leyte, Philippine Islands, for 18 days only before transfer to a non-infective area. A combination of faeces examination and proctoscopic biopsy proved a very effective means of diagnosis. In five cases in which the faeces were negative the proctoscopic examination proved positive. The infections were light and were without clinical symptoms. Forty-two of the cases received 40 c.c. of foudadin (343 mg. of antimony) but owing to the inadequacy of the dosage, 21 cases relapsed in the following month. R.T.L.

(4b) To obtain basic information for the selection of a suitable laboratory host for experiments with *Schistosoma mansoni*, 8 laboratory animals were compared. The percentage of cercariae which reached maturity was 31.8% in hamsters, 22.1% in albino mice and 17.2% in cotton-rats. Owing to the high death rate in hamsters it was necessary to limit the number of cercariae to 200 and the infections did not last more than 10 weeks; while very suitable for short-range experiments, hamsters are therefore not so useful for long-range investigations. Cotton-rats do not succumb easily to high density exposures and supply eggs over a long period, but are more difficult to handle and there is evidence of some inhibitory factor lowering the production of adults. Mice are satisfactory hosts but they do not produce as high a proportion of adults or produce as many viable eggs, while the adults are not as large as those found in cotton-rats. For chemotherapeutic studies, it is concluded that mice are the best experimental animals. Because of their immune reactions, rats are especially valuable for general studies on immunology and on the means of modifying their resistance but their use is limited as spontaneous cures may occur. Dogs are entirely refractive. Cats, rabbits and guinea-pigs do not provide eggs and the recovery of adult worms is difficult. The worms are large and well developed in cats and rabbits. R.T.L.

(4d) From a study of hookworm infections in rural school children the conclusion is reached that egg counts, if restricted to anaemic individuals, will reveal most of the cases of extremely heavy infection but will not detect those in which the haemoglobin level, although markedly reduced, is still within the normal range. Almost all those with egg counts above 20,000 per c.c. of faeces were anaemic or border-line cases but in 50% of those with counts of 5,000 to 20,000 per c.c. the haemoglobin was above the border-line. R.T.L.

(4e) Ackert & Ligenzowski have tested the efficacy of various chemicals in destroying ova and larvae of *Ancylostoma caninum* in faeces-soil cultures. They find that 5% or 10% acetic acid is the most effective, but that 10% concentrations of trichloroacetic acid or lactic acid also have a lethal action. Oxalic, citric or tartaric acids, sodium hydrogen phosphate and ammonium sulphate have little effect. S.W.

5—American Journal of Veterinary Research.

- a. TODD, A. C. & HANSEN, M. F., 1951.—“The economic import of host resistance to helminth infection.” 12 (42), 58-64.

(5a) Data obtained from an experiment with 566 chicks show that progressively greater weight gains accompanied progressive increases in the number of *Ascaridia galli* found at post-mortem. The mean number of worms was 10.4 in birds after three weeks exposure to infection by $50 \pm$ infective ova. It is suggested that the energy employed in resisting infection prevents maximum efficient weight gains. R.T.L.

6—Annales de Parasitologie Humaine et Comparée.

- a. BUTTNER, A., 1951.—“La progénèse chez les trématodes digénétiques (suite). Technique et recherches personnelles.” 26 (1/2), 19-66.
b. GALLIARD, H., 1951.—“Recherches sur l'infestation expérimentale à *Strongyloides stercoralis* au Tonkin (2e note).” 26 (1/2), 67-84.

- c. BIOCCA, E. & CHABAUD, A. G., 1951.—"Redescription de *Seuratum mucronatum* (Rud. 1809). (Nematoda—Cucullanidae)." 26 (1/2), 85–92.
- d. WANSON, M. & HOLEMANS, K., 1951.—"L'habitat des stades préimaginaux de *Simulium neavei* et de *Simulium renauxi*." 26 (1/2), 93–98.
- e. DOLLFUS, R. P., 1951.—"Sur *Distomum polyoon* O. von Linstow, parasite mal connu du ralli-forme *Gallinula chloropus* (L.)." 26 (1/2), 128–131.

(6a) Buttner continues her account of the investigations into the progenesis of *Paralepoderma* (= *Plagiorchis*) *brumpti* [see also Helm. Abs., 19, Nos. 5a, 17a, 274i]. The experimental methods used included the cultivation *in vitro* of metacercariae using a modification of the hanging drop technique. Unsuccessful attempts were made to induce cercariae to encyst on five species of aquatic snails, two species of leeches, one species of insect larva and four species of fish. Encystment occurred rapidly on tadpoles of *Molge palmata*, *Alytes obstetricans*, *Xenopus laevis* and *Amblystoma mexicanum*. Tadpoles were killed and examined at intervals. The metacercariae of various ages which were recovered are described and figured. An attempt to obtain adults by feeding metacercariae to two snakes, *Tropidonotus viperinus* and *T. natrix* was unsuccessful. Buttner does not consider *Paralepoderma brumpti* to be identical with *Paralepoderma* (= *Distoma*) *cloacicola*. From the original infection in *Planorbis planorbis* three generations of cercariae have been produced progenetically. Both oogenesis and spermatogenesis take place within the cyst, and eggs containing miracidia are visible in the uterus, indicating that self fertilization occurs. There is no evidence that the eggs develop parthenogenetically as may be the case in *Ratzia joyeuxi*. Predators of the amphibians may play a passive role in dissemination by dissolving the cysts and liberating the eggs in the faeces. S.W.

(6b) Galliard compares the strains of *Strongyloides stercoralis* from the Antilles and Africa with those from Indo-China. He finds that (i) they are not as virulent, (ii) they show a different type of exogenous development, (iii) they lose virulence by repeated passage through dogs, (iv) at the first passage into a dog those with direct development are less virulent than those with mixed development. He concludes that different geographical and biological races of *S. stercoralis* exist, distinguishable only by their degree of infectivity in the dog, and considers that this accounts for the diversity of opinion on the identity of the *Strongyloides* of man and dog. He reports 5 cases of hypervirulent strongyloidiasis in man which resulted in death and reviews similar cases reported by other workers. Auto-infection must take place but Galliard was unable to demonstrate penetration of the gut wall by larvae. He is of the opinion that there may exist certain extremely virulent strains which may hasten death without causing it directly. No immunity against the Old World strains could be produced experimentally in dogs. Neither preventive nor curative vaccination with dead or pulverised larvae proved effective, but in one case vaccination lessened the virulence of the strain. No naturally infected cats were found and Galliard finds that they are not such satisfactory experimental hosts as are dogs. S.W.

(6c) Biocca & Chabaud redescribe and give four drawings of *Seuratum mucronatum* collected from the intestine of *Plecotus auritus* in France. They consider that there may be two species of *Seuratum* occurring in bats in Europe but that they are probably identical. The four other species of *Seuratum* which have been described fall into two distinct groups, the first containing *S. tacapense* and *S. cadarachense*, and the second *S. congolense*, *S. mucronatum* and *S. cancellatum*. The differences between these three species are slight and their separation difficult. S.W.

(6d) Wanson & Holemans find that *Simulium renauxi* is a vector of *Onchocerca volvulus* in Africa as well as *S. damnosum* and *S. neavei*. As in *S. neavei*, the larval and pupal stages of *S. renauxi* are found on a fresh-water crab. They discuss the possible identity of these two species. S.W.

(6e) Dollfus identifies, as a *Leyogonimus*, *Distomum polyoon* a trematode collected from the intestine of *Gallinula chloropus* in France. He gives a short description and one drawing, and compares his specimen with those described by Linstow, Braun and Skrjabin. S.W.

7—Annals of Applied Biology.

- a. GOODEY, J. B., 1951.—“The potato tuber nematode, *Ditylenchus destructor* Thorne, 1945: the cause of eelworm disease in bulbous iris.” 38 (1), 79–90.
- b. MORGAN, D. O., 1951.—“Helminths in Scottish hill sheep.” [Abstract of paper presented at meeting of the Association of Applied Biologists, Edinburgh, July 4–7, 1950.] 38 (1), 305–306.

(7a) Nematode disease of six species of bulbous iris has been attributed to *Ditylenchus dipsaci* by numerous authors since first reported in 1925. Experiments now show that *D. destructor* Thorne, 1945 is responsible. Eelworms from potato tubers and iris bulbs are morphologically indistinguishable. Transfers of infestation have been reciprocally effected between potato, bulbous iris, *Mentha arvensis* and *Sonchus arvensis*. Disease is confined to the underground parts of the plants. Nematode lesions are reported for the first time from iris roots and potato haulms. The quiescent, resistant, pre-adult larval stage of *D. dipsaci* is not found in *D. destructor*. J.B.G.

(7b) In hill sheep in Scotland, intestinal helminth infection is a problem of considerable importance. Its occurrence clearly follows a seasonal pattern. There is an increase in the worm burden from March to about the end of May or early June, followed by a gradual fall. It is very clearly defined in fully mature sheep but not so clear in hoggs. It is considered that this seasonal pattern should be regarded as an essential guide in the planning of experiments to test programmes of prophylactic dosing. R.T.L.

8—Australian Veterinary Journal.

- a. ROBERTS, F. H. S., O'SULLIVAN, P. J. & RIEK, R. F., 1951.—“The significance of faecal egg counts in the diagnosis of parasitic gastro-enteritis of cattle.” 27 (1), 16–18.
- b. SOUTHCOTT, W. H., 1951.—“The toxicity and anthelmintic efficiency of hexachlorethane in sheep.” 27 (1), 18–21.
- c. KEEP, J. M., 1951.—“*Filaroides (Oslerus) osleri* infestation in conjunction with a generalised infection in a greyhound.” 27 (2), 43–45.
- d. GORDON, H. McL. & GREEN, R. J., 1951.—“Phenothiazine photosensitisation in sheep.” [Correspondence.] 27 (2), 51–52.

(8a) Faecal egg counts as measures of worm burdens in cattle are discussed briefly. Single egg counts from individual animals proved very effective aids to diagnosis, provided a sufficient number of animals was sampled and the disease was considered as affecting the herd rather than individual animals. Conspicuous symptoms appeared in calves only after the infestations had been present for many weeks. Recovery is slow even after the worms have been removed, and affected animals may not thrive until their nutrition is improved. During summer months when nutritional conditions are good, cattle thrive while showing high egg counts, but in winter when feeding conditions have deteriorated cattle with similar egg counts showed symptoms of helminthiasis. In calves 6–12 months old, counts of 1,000 *Haemonchus contortus* e.p.g.m. (eggs per gramme of faeces) accompanied clinical haemonchiasis. Counts of 500–700 e.p.g.m. indicated “border-line” infestations, and if accompanied by counts of 300 e.p.g.m. or more of *Bosicola radiatum* or 300 e.p.g.m. or more of *Bunostomum phlebotomum* were considered dangerous. Heavy infestations with *Cooperia punctata* and *C. pectinata* have been seen in dairy calves. Egg counts up to 5,000 e.p.g.m. were not usually accompanied by clinical helminthiasis. Counts of 10,000 to 37,000 e.p.g.m. in calves 12–20 weeks old were accompanied by profuse diarrhoea, slight anaemia, emaciation and death. Counts of over 500 e.p.g.m. for *B. radiatum* were considered important, and counts of 1,000 or over indicated serious infestations. Counts of less than 500 e.p.g.m. in cattle up to 12 months old, unless accompanied by other species, particularly *H. contortus* and *B. phlebotomum*, were not regarded as serious. Counts

of 500–800 e.p.g.m. indicated serious infestations with *B. phlebotomum*. Lower counts, 300 e.p.g.m. were of significance when accompanied by counts of 500 e.p.g.m. of *H. contortus* or 300–500 e.p.g.m. *B. radiatum*. Data for *Trichostrongylus axei* were meagre but it appears that counts of 1,000 e.p.g.m. may be of significance. *Ostertagia ostertagi* does not commonly occur in large numbers in cattle in Queensland. Counts of 150 e.p.g.m. were recorded but appeared to be of little significance. H.MCL.G.

(8b) In a field trial sheep suffering from fascioliasis were treated with hexachlorethane and carbon tetrachloride. Of 15 sheep given 30 gm. hexachlorethane in a bentonite suspension, two died and six others showed various degrees of intoxication. Of 15 sheep given a 15 gm. dose two showed intoxication, one being severely affected. Most of the affected animals responded to subcutaneous or intravenous injections of calcium borogluconate. Sheep drenched with carbon tetrachloride, 1 ml. and 2 ml., showed no ill-effects. The two drugs showed similar fasciolicidal efficiency but a 30 gm. dose of hexachlorethane was more effective than 1 ml. carbon tetrachloride against *Haemonchus contortus*. H.MCL.G.

(8c) The first authenticated case of *Filaroides osleri* in Australia is reported in a dog bred and reared in the Dubbo district. R.T.L.

(8d) An outbreak of severe phenothiazine photosensitization occurred in lambs in Tasmania, although the dose rate used was not unduly high. This leads Gordon & Green to advise that a test group of 20–30 lambs should be treated before a flock is drenched. If irritability, shaking of the head, rubbing of the ears, or reddening of ears or muzzle follows, the animals should be kept in the shade or in sheds during daylight. After dosing in the afternoon, the lambs should be kept in shade from about 8 a.m. to 4 p.m. on the two following days. R.T.L.

9—Berliner und Münchener Tierärztliche Wochenschrift.

- a. DECKWER, N., 1951.—“Zur Frage der Magenwurmseuche der Ziegen.” Year 1951, No. 1, pp. 13–14.
- b. HÄGEN, K., 1951.—“Zur Bekämpfung der *Taenia saginata*.” Year 1951, No. 1, p. 18.
- c. WOLFFHÜGEL, K., 1951.—“Parasitologische Notizen. 19. Nutria (*Myocastor coypus*) als Wirt von *Echinococcus*.” Year 1951, No. 4, p. 79.
- d. JACOB, E., 1951.—“Parasitologische Notizen. 20. ‘Blackhead’ bei einem Teichhuhn.” Year 1951, No. 4, p. 79.
- e. SIERCKE, H., 1951.—“Parasitologische Notizen. 21. Zum Krankheitsbild bei *Syngamus trachea*-Befall.” Year 1951, No. 4, pp. 79–80.

(9a) The goat population of Berlin increased from 5,000 in 1938 to 16,000 in 1948 owing to the importance of the goat as a source of meat and milk: this has led to more intensive study of disease in this host. Of 190 goats examined by Deckwer in 1949, 68 had gastro-intestinal troubles which in 29 cases were due to stomach worms. Deckwer briefly outlines the symptoms and diagnosis of stomach worm disease in goats. He recommends the Marienfelde stomach worm tablets for treatment: he has not been successful with either phenothiazine or Nemural. From the point of view of prophylaxis, special importance is attached to regular stall disinfection, for which a 1% solution of caustic soda (applied hot) is recommended. A.E.F.

(9b) Hagen presents a short review of recent literature (including his own earlier work) on the control of *Taenia saginata*. He recommends the treatment of human carriers with male fern combined with fasting and that this should be carried out in hospital to ensure that the regimen is observed under adequate supervision. A.E.F.

(9c) In view of Schulte's claim to have recorded the first instance of hydatid infection in *Myocastor coypus*, Wolffhügel recalls that he published two cases from the Argentine in 1911. E. Jacob adds a note drawing attention to other cases in German literature viz. by Vogel (1931), Grieder (1937), Heidegger (1938) and Schmidt (1944). R.T.L.

(9d) Blackhead is reported as a fatal hepatic disease in *Gallinula chloropus*. It is said to have been acquired from hens on a neighbouring farm. R.T.L.

(9e) Siercke has observed *Syngamus trachea* in numerous nestling jackdaws (*Coloeus monedula*) and two carrion crows (*Corvus corone*) and briefly describes the symptoms. R.T.L.

10—Boletín de Informaciones Parasitarias Chilenas.

- a. ALBA V., M. & JARPA G., A., 1951.—"Triquinosis en ratas del Matadero Municipal de Santiago Chile." 6 (1), 7. [English summary p. 7.]
- b. TAGLE V., I., 1951.—"Parasitos en la merluza." 6 (1), 8-9.
- c. ANON., 1951.—"Campanías antiparasitarias en Chile." 6 (1), 10-11.

(10a) Of 100 rats trapped at the municipal abattoir in Santiago, Chile, 10 were found to be infected with *Trichinella spiralis*. R.T.L.

(10b) Large numbers of larvae of *Hepatoxylon trichiuri* and *Grillotia heptanchi* are frequently found in hake, especially in those caught near Puerto Montt in Chile. The adult cestodes develop in the shark. P.M.B.

(10c) By means of anthelmintic treatment of all dogs with arecoline hydrobromide and by a publicity campaign, it is hoped to control the incidence of hydatidosis in the island of Tierra del Fuego. A further campaign on the mainland of Chile between 38° and 42°S. is planned. In connection with a campaign against *Diphyllbothrium latum* infection of which 18 cases have now been reported in Chile, an investigation carried out in the region of the lakes of Collico, Caburga, Villarrica, Panguipulli and Ríñihue showed that 90 of the 125 salmon examined (72%) were infected with spargana. P.M.B.

11—British Medical Journal.

- a. ANON., 1951.—"Trichiniasis from infected pork." Year 1951, 1 (4706), 592.
- b. WELLS, A. V., 1951.—"Identity of hookworm in the throat." [Correspondence.] Year 1951, 1 (4712), 952.

(11b) After further consideration Wells identifies as *Syngamus kingi* the worms found in the throat of a girl in St. Lucia, previously tentatively diagnosed as *Necator americanus* [for abstract see Helm. Abs., 19, No. 164f]. R.T.L.

12—Bulletin de la Société de Pathologie Exotique.

- a. PICK, F., 1951.—"La compression des veines due à une invagination intestinale comme mécanisme d'enrichissement de microfilaires chez un *Papio sphinx*." 44 (1/2), 57-58.
- b. PICK, F., 1951.—"Sur un nouveau trématode du genre *Watsonius* chez *Papio sphinx*." 44 (1/2), 59-61.
- c. GAUD, J. & CHABAUD, A. G., 1951.—"Présence du nématode *Gongylonema pulchrum* chez l'homme, au Maroc." 44 (1/2), 62-65.
- d. SCHWETZ, J., 1951.—"Sur le problème actuel des bilharzioses humaines au Congo belge." 44 (3/4), 195-202.
- e. CAMAIN, R., NAVARRANNE, P. & AYITE, E., 1951.—"Deux cas d'annexite à *S. haematobium* observés à Dakar." 44 (3/4), 202-208.
- f. CORCOS, A., DUPOUX, R. & ABITBOL, S., 1951.—"Traitement des parasitoses intestinales à vers ronds par le diéthyl carbamyl 4 méthyl pipérazine (notézine)." 44 (3/4), 209-215.

(12a) Pick describes the finding of microfilariae in *Papio sphinx* in a vein compressed by an intestinal invagination. By causing a temporary stasis of a marginal vein in the ear, opening the vein and examining the first drop of blood, microfilariae undetected by normal techniques were found in three baboons. Microfilariae were never found in the second or third drops of blood. Pick recommends this as a simple technique for the concentration of microfilariae. S.W.

(12b) Pick describes *Watsonius deschiensi* n.sp. from the large intestine of *Papio sphinx*. The diagnosis is based on differences in colour, the genital papilla, the caeca and the acetabulum. S.W.

(12c) Gaud & Chabaud identify as *Gongylonema pulchrum* two female nematodes obtained from the buccal mucosa of a patient in Morocco. One worm was mature. *Ectobia germanica* is considered to be a likely intermediate host. S.W.

(12d) Schwetz reviews the previous knowledge of, and discusses the problems associated with, human schistosomiasis in the Belgian Congo. The distribution of *Schistosoma mansoni* and *S. haematobium* is considered together with that of the intermediate hosts, *Planorbis* and *Physopsis*. He is of the opinion that *S. intercalatum* is a valid species and that Fischer's description is accurate. Schwetz concludes with a review of the methods of control which are likely to be both practicable and effective. S.W.

(12e) Camain *et al.* describe two cases of schistosomiasis haematobia of the female genitalia. Adult worms were found in the uterus, and eggs, both viable and sterile, were present in the ovary. S.W.

(12f) Corcos *et al.* describe the use of diethyl carbamyl-4-methyl piperazine (notézine) [hetrazan] against helminths in man. Treatment was carried out for 10 days, the dose being four tablets daily for adults and $\frac{1}{2}$ to 2 tablets daily for children depending on their age. Of 22 cases of ascariasis, four of which were also infected with hookworm, 20 were cured; of 13 cases of ancylostomiasis, either a pure infection, or associated with other parasites, seven were cured; of three cases of trichuriasis, two were cured. The authors conclude that notézine is particularly effective against *Ascaris* infections. S.W.

13—California Agriculture.

- a. RASKI, D. J., ALLEN, M. W. & McCALLUM, R. D., 1951.—“Sugar-beet nematode. Chemical control trials test two methods of applying soil fumigants.” 5 (2), 6, 15.

(13a) Raski *et al.* have tested D-D mixture at 250 lb. per acre against sugar-beet eelworm, comparing application by plough and by chisel (tine) injector after ploughing and harrowing. They used 8-fold replication of plots 28 ft. \times 200 ft. Both yields and eelworm counts favoured plough application. Based on 400 row-feet per plot, yields were 4.5, 12.4 and 16.4 tons per acre for controls, chisel and plough application respectively. Eelworms were estimated by using beet seedlings as indicator plants and counting up to 100 cysts per plant, after five weeks. Cover samples thus counted indicated kills of 71.5 and 83.1% for chisel and plough. Soil profile samples, taken as 2 inch cubes of soil from a profile 14 in. wide and 18 in. deep, gave corresponding kills of 43.9% and 52.3% averaged over the whole profile. Kill was very poor in the top 2 inches. This was a light soil for California and, at \$40 per acre for treatment, soil fumigation cannot be recommended for the usual beet soils of that State. B.G.P.

14—California Fish and Game.

- a. ROSEN, M. N., 1951.—“A noticeable absence of bladder worms in Catalina deer.” 37 (2), 217.

(14a) Although bladder worms occurred in 90% of several hundred deer examined at the Disease Research Laboratory of the California Division of Fish and Game, no instance of infection was observed in the viscera of 93 deer on Santa Catalina Island. R.T.L.

15—Canadian Journal of Comparative Medicine.

- a. RAO, N. S. K. & CHOQUETTE, L. P. E., 1951.—“On the finding of an intermediary host for *Moniezia expansa* (Rud. 1810) in eastern Quebec.” 15 (1), 12–14. [French summary p. 14.]
b. CHOQUETTE, L. P. E., 1951.—“Helminthes parasites trouvés chez la mouffette *Mephitis mephitis* dans la province de Québec.” 15 (3), 62–64. [English summary p. 63.]

(15a) The oribatid mite *Scheloribates laevigatus* is shown by experimental infection to be the only species acting as a vector of *Moniezia expansa* in eastern Quebec. When mites collected from an enclosed plot on which no sheep had grazed for several years were

exposed to infection with *M. expansa* eggs, larvae were first found within 24 hours and mature larvae after 75 days. Although *S. laevigatus* has already been reported as an intermediate host of this tapeworm in the U.S.A. and in Russia this is the first record from Canada. P.M.B.

(15b) Choquette examined 26 *Mephitis mephitis* from four regions of Quebec and found 22 animals infected with helminths. *Mesocostoides latus*, *Oochoristica oklahomensis* and *Arthrocephalus lotoris* are recorded for the first time in Canada and from this host. *Physaloptera maxillaris* and *Ascaris columnaris* were also found. S.W.

16—Canadian Journal of Zoology. [Cont. of Canadian Journal of Research. Section D, Zoological Sciences.]

- a. CHOQUETTE, L. P. E., 1951.—"On the nematode genus *Rhabdochona* Railliet, 1916 (Nematoda : Spiruroidea)." 29 (1), 1-16.
- b. CHOQUETTE, L. P. E., 1951.—"Description of *Metabronema prevosti* sp.nov. with a note on the genus and a list of its species and their host and geographical distribution." 29 (2), 102-108.
- c. REESAL, M. R., 1951.—"Observations on the biology of the infective larvae of *Strongyloides agoutii*." 29 (2), 109-115.
- d. REESAL, M. R., 1951.—"Observations on the development of *Strongyloides agoutii* of the agouti in the guinea pig." 29 (2), 116-120.

(16a) In Choquette's opinion Rhabdochonidae should contain only (i) Rhabdochoninae for the fish spirurids with a smooth cuticle, viz., *Rhabdochona*, *Cystidicola*, *Capillospirura*, *Metabronema*, *Comephoronema*, *Sterliadochona* and *Pseudocystidicola*; (ii) Spinitectinae for *Spinitectus*. In North America six species of *Rhabdochona* have been described from fishes. These are tabulated with their hosts. A seventh species *R. milleri* n.sp. is described from *Moxostoma aureolum* and differs from *R. kidderi* in possessing 11 pairs of preanal and 5 pairs of postanal papillae. In both the spicules are bifurcated. The two species differ in size and in ratio of their spicule length. *R. laurentiana* is considered to be a synonym of *R. cascadiella*. The host and geographical distribution of the 33 named and one unnamed species of *Rhabdochona* are listed. R.T.L.

(16b) The systematic status of *Metabronema* in relation to other spirurid genera is briefly reviewed. A list is given of the species, their hosts and geographical distribution. *M. prevosti* n.sp. is described from *Ameiurus nebulosus nebulosus* from the Ottawa river and differs from other species in the size of spicules and eggs and the arrangement of the caudal papillae. R.T.L.

(16c) *Strongyloides agoutii* larvae are stimulated but not attracted by light and are thermotactic. They can live for four weeks in tap-water and can survive moderate desiccation. They migrate in all directions and this tendency increases with a rise in temperature especially over 28°C. There is no predilection for strictly upward movements. R.T.L.

(16d) Guinea-pigs lose *Strongyloides agoutii* infections after about six weeks and are then immune to further infection. The female worms are already effete three or four weeks after infection. But in the normal host [*Dasyprocta* sp.] the infection may last for more than a year. Infected guinea-pigs gain weight and are just as active as uninfected individuals. The fourth-stage larva and the young adult are described. R.T.L.

17—Chronicle of the World Health Organization.

- a. ANON., 1951.—"Bilharziasis survey reveals infected areas." 5 (2), 60.

(17a) In a village [unnamed] in Saudi Arabia, Azim found evidence of Bilharzia infection in 22 out of 25 schoolchildren. He attributes the source of infection to water channels used for irrigation purposes. Vectors were also found in rain-water pools in the Riad area in central Saudi Arabia where in some cases the incidence in schoolchildren reached 60%. In Syria the incidence of bilharziasis was 60-70%. R.T.L.

18—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

- a. CHABAUD, A. G., 1951.—“ Cycle évolutif, chez des coléoptères Ténébrionides, de deux espèces de nématodes Habronematinae (genre *Sicarius* et genre *Hadjelia*) parasites de *Upupa epops* L. à Banyuls.” 232, 564-565.

(18a) *Sicarius dipterum* and *Hadjelia truncata* which live under the mucous membrane of the gizzard of *Upupa epops* have been shown experimentally to undergo their larval development in the body-cavity of *Phylan abbreviatus*, *Asida sericea* and *A. jurinei* var. *marmottani*. R.T.L.

19—Crops and Soils. Madison, Wisconsin.

- a. ANON., 1951.—“ Talent, new alfalfa, resists nematodes and yields well in Oregon.” 3 (4), 27.

(19a) The new alfalfa variety “Talent” developed at the Southern Oregon Branch Experiment Station is highly tolerant to the alfalfa stem nematode. R.T.L.

20—East African Agricultural Journal.

- a. DINNIK, J. A., 1951.—“ An intermediate host of the common stomach fluke, *Paramphistomum cervi* (Schränk), in Kenya.” 16 (3), 124-125.

(20a) Dinnik finds that *Paramphistomum cervi*, *P. explanatum*, *Cotylophoron cotylophorum*, *Carmyerius* sp. and *C. exoporus* occur in cattle in Kenya. *P. cervi* is the most common in cattle, sheep and goats and was found in 126 out of 220 animals examined. Four species of laboratory-bred snails were exposed to infection by miracidia of *P. cervi* but only *Bulinus syngenes* and *B. alluaudi* became infected. The cercariae developed in 48-76 days; *B. syngenes* continued to shed cercariae after more than four months. S.W.

21—Indian Farming.

- a. RAY, H. N., 1951.—“ Indian Veterinary Research Institute, Diamond Jubilee 1890-1950. Parasitology Section.” 12 (3), 28-34. [Special Number.]

(21a) The incidence and importance of parasitic infection in Indian live-stock is gradually being realized. The great majority of the domesticated animals in India are infected clinically or sub-clinically with helminths which exercise a highly adverse influence on the animal wealth of the country. The Veterinary Zoology Section of the Indian Veterinary Research Institute has been renamed Section of Parasitology under Dr. H. N. Ray and includes the subsection of Helminthology formerly in the Section of Pathology. R.T.L.

22—Indian Medical Gazette.

- a. REDDY, D. J., 1951.—“ A case of cysticercosis.” 86 (1), 14-15.

(22a) Two *Cysticercus cellulosae* were found at post-mortem in the brain of an Indian sweeper. An exploratory operation had revealed an abscess of the right temporal lobe secondary to middle ear suppuration. Reddy states that six out of 38 cerebral tumours examined at the Madras Medical College in 1948, and two out of 16 at the Andhra Medical College in 1950 were due to cysticerciasis. R.T.L.

23—Indian Veterinary Journal.

- a. RAMANUJACHARI, G. & ALWAR, V. S., 1951.—“ *Bunostomum bhavanagarensis* n.sp.” 27 (4), 239-243.
b. RAMAKRISHNAN, M., 1951.—“ An outbreak of acute amphistomiasis among cattle in Nellore District.” 27 (4), 267-272.

(23a) Ramanujachari & Alwar describe *Bunostomum bhavanagarensis* n.sp. from the duodenum and jejunum of a cross-bred deer (*Antelope cervicapra* × *Cervus dama*). They base their diagnosis on the absence of sub-ventral lancets, the origin of the left externo-dorsal ray and the presence of a papilliform process on the internal aspect of the right dorsal ray. S.W.

(23b) Ramakrishnan describes an outbreak of acute amphistomiasis in cattle in the Nellore district (Madras). Infection was 30% ; mortality was 72% among untreated and 16% among treated animals. Symptoms included oedema of the throat and diarrhoea. Immature paramphistomes were present in the abomasum and duodenum and mature worms in the rumen of four out of six cases examined post mortem. These were identified as *Gastrothylax crumenifer* and *Fiscoederius cobboldi*. Snails present in the area were *Indoplanorbis* and *Vivipara* spp. S.W.

24—Journal of the American Veterinary Medical Association.

- a. TODD, A. C., BROWN, R. G., WYANT, Z. N. & HULL, F. E., 1951.—“ Aberrant loci in equine verminous aneurysms.” 118 (887), 102.
- b. DAVIS, C. L. & KEMPER, H. E., 1951.—“ The histopathologic diagnosis of filarial dermatosis in sheep.” 118 (887), 103-106.
- c. BATTE, E. G., SWANSON, L. E. & MURPHY, J. B., 1951.—“ Control of fresh water snails (intermediate hosts of liver flukes) in Florida.” 118 (888), 139-141.
- d. DIBBELL, C. B., 1951.—“ *Dirofilaria immitis* in abdominal cavity of dog.” 118 (890), 298.

(24a) Immature *Strongylus vulgaris* from aneurysms in unusual locations are reported from two young Thoroughbred horses viz. in the hepatic artery and in the posterior aorta. A total of 1,704 immature worms were collected from various abdominal arteries. R.T.L.

(24b) Examination of the “sore-head” skin lesions of sheep from Colorado and New Mexico revealed microfilariae with hyperplasia of the epithelial layer and a variable amount of hyperkeratosis. In places the epithelium showed ulceration, haemorrhage and serous exudation. Vesicles near the surface were filled with serum, red cells and eosinophils. There was diffuse infiltration of all the skin layers with granulomatous inflammatory cells extending into the underlying musculature. Microfilariae seen within the capillaries were obviously responsible for the inflammatory process. Adult filariae [not identified] were found in the arteries of the New Mexico sheep. The skin only of the Colorado sheep was examined. R.T.L.

(24c) In Florida, cattle livers valued at \$41,214.88 were condemned in 1947 on account of *Fasciola hepatica* infection. In 1948 the loss from this cause was \$60,143.50. There were indirect losses from (i) loss of weight and stunted growth, (ii) deaths from severe infection, (iii) reduction in milk in dairy cattle and in weight in beef cattle, (iv) reduced calf crop and (v) reduced carrying capacity of the pastures. The vectors in Florida are *Pseudosuccinea columella* and *Fossaria cubensis*. In an aquarium stocked with two adult *F. cubensis* there were 1,492 snails in 8 months. Control consists in destroying the adult flukes with hexachlorethane and reducing the vectors by the application of copper sulphate, the filling of low areas and the fencing off of ponds, but eradication is difficult as the snails may crawl below the ground surface. They can remain alive for four months on sand moistened from seepage, dew and occasional showers, and for 16 days in dry sand. Florida ranchers prefer to maintain the water-table four inches below the ground surface to secure good grazing pastures. R.T.L.

25—Journal de Médecine de Bordeaux et du Sud-Ouest.

- a. CALLOT, J., 1951.—“ Parasitologie médicale.” 128 (1), 246-248.
- b. HARANT, H., 1951.—“ Quelques reflexions sur les rapports de la parasitologie et de la clinique.” 128 (1), 248.
- c. HARANT, H., 1951.—“ La notion d'impasse en parasitologie.” 128 (1), 248-249.
- d. GARIN, C. & GARIN, J. P., 1951.—“ Sur le traitement de la filariose à *F. loa* par la Notézine.” 128 (1), 250-252.
- e. MONNET, P., COUDERT, J., CORNUT, P. & BRETTE, R., 1951.—“ Précocité de l'intra-dermo-réaction à l'extrait de douve. Valeur diagnostique dans un cas de distomatose à symptomatologie anormale et compliquée.” 128 (1), 252-253.

- f. RANQUE, J. & CLAYETTE, J., 1951.—"La distribution géographique de la filariose canine dans la région provençale. (Ses rapports avec les anciennes zones d'endémie palustre)." 128 (1), 258-259.
- g. PAUTRIZEL, R. & BAILENGER, J., 1951.—"Intérêt de l'emploi des agents détersifs dans le traitement des oxyuroses." 128 (1), 275.
- h. PAUTRIZEL, R. & BAILENGER, J., 1951.—"Action de la nivaquine sur les ténias *in vivo*." 128 (1), 275-276.

(25d) After the administration of 0.1 gm. of notézine [hetrazan] for the treatment of loiasis in a missionary who had shown recurring symptoms over a period of 15 years while in Central Africa, a dead adult *Loa loa* was found under the skin. The patient experienced acute muscular and articular pains, fever, fainting and shivering, accompanied by the appearance of many small subcutaneous nodules. The severity of the reaction is attributed to the patient's non-abstention from alcohol during treatment. Further doses produced less severe reactions, owing to the administration of an antihistamine drug and compliance with medical instructions to abstain from alcohol. Microfilariae disappeared from the blood. It is noted that the treatment was also effective in killing four *Ascaris lumbricoides*. It is considered that hetrazan is normally administered in too large quantities and that the initial dose should be small when the number of microfilariae present is high. P.M.B.

(25e) The value of extract of *Fasciola hepatica* in the early diagnosis of fascioliasis is illustrated by a complex case, in which a strong positive reaction resulted from an intradermal test 46 days before eggs of *F. hepatica* were detected in bile obtained by duodenal intubation. P.M.B.

(25f) By examining the blood of dogs the distribution of *Dirofilaria immitis* in coastal villages of Provence east of Marseilles has been established. An important endemic centre exists in the plain of Hyères extending southwards into the northern part of the Giens Peninsula. Twenty-six out of 54 dogs there had microfilariae, whereas 42 examinations made between Marseilles and Toulon were all negative. As in the endemic areas of the Crau and Camargue, the distribution of *D. immitis* coincides closely with the extent of malarial zones. *Anopheles* spp. are the principal vectors. P.M.B.

(25g) Auto-infection with *Enterobius vermicularis* was prevented by washing the perianal region twice daily with a 10% solution of the detergent "Désogène Geigy", while taking a three-day course of phenothiazine. P.M.B.

(25h) One gm. of nivaquine, a quinoline derivative, removed tapeworms in all of 10 cases, although the heads were not recovered. In seven cases the cure was apparently complete, but in three cases segments were again passed 3-4 months later. Nivaquine is less toxic than the acridine derivative, quinacrine. P.M.B.

6—Journal of Neuropathology and Clinical Neurology. Chicago.

- *a. LICHTENSTEIN, B. W. & SIMON, A., 1951.—"Cerebral schistosomiasis producing epilepsy in a veteran of the Pacific." 1 (1), 81-87.

7—Journal of Parasitology.

- a. WRIGHT, W. H., 1951.—"Medical parasitology in a changing world. What of the future?" 37 (1), 1-12.

(27a) Wright reviews the world situation with respect to parasitic diseases. He considers the enormous loss of productive man-power caused by these diseases and relates this to the increasing dependence of the U.S.A. on tropical countries for supplies of essential raw materials, and to the need for an increased world food production. As this increase cannot be brought about without the cultivation of many areas endemic for malaria, schistosomiasis, trypanosomiasis etc. and which are at present unable to be utilized, it is essential that efficient control methods and treatments should be devised. S.W.

27—Journal of Parasitology (cont.)

- b. LI, S. Y. & HSÜ, H. F., 1951.—“On the frequency distribution of parasitic helminths in the naturally infected hosts.” 37 (1), 32-41.
- c. STIREWALT, M. A., 1951.—“The frequency of bisexual infections of *Schistosoma mansoni* in snails of the species *Australorbis glabratus* (Say).” 37 (1), 42-47.
- d. BOYD, E. M., 1951.—“A survey of parasitism of the starling *Sturnus vulgaris* L. in North America.” 37 (1), 56-84.
- e. CHITWOOD, M. D., 1951.—“Notes on the physiology of *Meloidogyne javanica* (Treub, 1888) (Nematoda: Heteroderidae).” 37 (1), 96-98.
- f. CHANDLER, A. C. & MELVIN, D. M., 1951.—“A new cestode, *Oochoristica pennsylvanica* and some new or rare helminth host records from Pennsylvania mammals.” 37 (1), 106-109.
- g. WEBSTER, J. D., 1951.—“Systematic notes on North American Acoelidae (Cestoda).” 37 (1), 111-118.

(27b) It is shown that the Pearsonian frequency curves of the 20 helminth species studied belong to the category of positive skewness and most of the curves, if fitted, belong to the I_1 of the frequency curves. The curve of each sex belongs to the same type. R.T.

(27c) Stirewalt confirms that in mice unisexual infections result from exposure to *Schistosoma mansoni* cercariae from *Australorbis glabratus*. Snails with a unisexual infection never produced a later bisexual infection. Many *A. glabratus* individuals were refractory to infection by miracidia from the experimentally infected mice. The percentage of snails infected when exposed to 1-20 miracidia increased from 32.5% to 70.2%. The average number of adult worms derived from infection with cercariae from snails exposed to different numbers of miracidia varied greatly. The assumption of Jaffe, Mayer & Pifan (1945) that only one miracidium will develop to the stage of cercarial production in *A. glabratus* is shown to be incorrect. R.T.

(27d) Boyd examined 300 starlings from six different States in the U.S.A. and found that 71% had cestodes, 68% had nematodes and 6% had acanthocephalans. Trematodes have not been recorded hitherto in this host in North America, but *Lutztrema* sp., *Brachylaemus* sp., *Leucochloridium* sp.(?) and *L. certhiae* were found, each in a single bird. The absence of *Syngamus trachea* is commented upon. The role of the starling as a importer of helminths from Europe and a potential disseminator among native birds and poultry is discussed. R.T.

(27e) The cell inclusions in the intestinal epithelium of *Meloidogyne javanica* [syn. *Heterodera marioni*] consist of (i) large clear droplets and (ii) smaller solid colourless bodies. The droplets are insoluble in water, soluble in acetone, turn brown in osmic acid and run together at 53°C. to 54°C. but not at 52°C. They fuse with heat or soil fumigants. The oil may be a neutral, slightly unsaturated ester. The solid bodies are insoluble in water and acetone, are digested in pepsin and HCl, and turn blue in triketohydrin hydrate. They are proteins, amino acids, peptides or peptones. A protein reserve is built up during the second to fourth-stage larvae and disappears during egg production. The egg-shell proper of *M. javanica* is chitin and is quite permeable to most reagents. Its mucoid layer contains a protein or glucoprotein. It is clear and colourless but the outer surface becomes yellowish then reddish-brown on ageing. It probably contains a mucoid. The vitelline membrane is waxy and colourless. An ethylene dibromide extract of whole eggs and of vitelline membranes behaves like beeswax, i.e. myricyl palmitate. R.T.

(27f) *Oochoristica pennsylvanica* n.sp. is described from *Blarina brevicauda*. As the testes are arranged in two lateral fields and the genital pores alternate irregularly it is differentiated from *O. oklahomensis*. R.T.

(27g) Webster describes and draws *Proterogynotaenia neoarctica* n.sp. from *Oxyechus vociferus*, and *Progynotaenia americana* n.sp. from *Charadrius melodus*, *C. semipalmatus*, *Crocethia alba* and *O. vociferus*. *Proterogynotaenia neoarctica* is differentiated from *P. roulei* by the possession of smaller hooks and a broad uterus. *Progynotaenia americana* has the

27—Journal of Parasitology (cont.)

- h. VAN CLEAVE, H. J. & WILLIAMS, R. B., 1951.—“Acanthocephala from passerine birds in Alaska.” 37 (2), 151–159.
- i. ALEXANDER, C. G., 1951.—“A new species of *Proteocephalus* (Cestoda) from Oregon trout.” 37 (2), 160–164.
- j. BARLOW, C. H. & MUENCH, H., 1951.—“Life span and monthly mortality rate of *Bulinus truncatus* and *Planorbis boissyi*, the intermediate hosts of schistosomiasis in Egypt.” 37 (2), 165–173.
- k. READ, C. P., 1951.—“The ‘crowding effect’ in tapeworm infections.” 37 (2), 174–178.
- l. O’CONNOR, G. R., 1951.—“Morphological and environmental studies on the hatching of ascarid eggs *in vitro*.” 37 (2), 179–182.

first one or two segments entirely male, which distinguishes it from all other species of the genus. The characters of each species of *Progynotaenia* are tabulated. *Shipleyia inermis* and *Gyrocoelia milligani* are recorded for the first time from *Limnodromus griseus scolopaceus* and *Charadrius nivosus* respectively. This is the first North American record of *S. inermis*. Webster rediagnoses the genera *Proterogynotaenia* and *Progynotaenia* and considers the separation of the Progynotaeniidae from the Acoleidae to be unjustifiable. s.w.

(27h) Van Cleave & Williams describe and figure *Plagiorhynchus paulus* n.sp. from *Passerella iliaca townsendi*, and *Lueheia boreotis* n.sp. from *Turdus migratorius caurinus*. *Plagiorhynchus paulus* is distinguished from *P. formosus* by the size of the proboscis hooks and from *P. odhneri* and *P. crassicollis* by the possession of fewer longitudinal rows of hooks and smaller eggs. *Prosthorhynchus upupae*, *P. charadrii* and *P. limnobaeni* are assigned to the genus *Plagiorhynchus* from the literature. *Lueheia boreotis* differs from *L. inscripta*, *L. lueheia* and *L. adlueheia* in the form and number of the lemnisci. *Plagiorhynchus formosus* is recorded from *T. m. caurinus*, and *Centrorhynchus scanensis* from *Ixoreus naevius naevius*, both for the first time in Alaska. The distribution is discussed. s.w.

(27i) Alexander describes and figures *Proteocephalus salmonidicola* n.sp. from *Salmo gairdnerii gairdnerii* and *Salvelinus fontinalis*. *P. salmonidicola* differs from *P. pychocheilus* in the proportions of the ripe proglottids, the diameter of the suckers, the length of the cirrus pouch and the position of the vagina, and from *P. parallacticus* by the absence of a vestigial fifth sucker on the scolex, the size of the strobila and the shape and dimensions of the ripe proglottids. s.w.

(27j) *Bulinus truncatus* and *Planorbis boissyi* when lightly infected with *Schistosoma haematobium* and *S. mansoni* respectively, carry these infections for the remainder of their lives. Under laboratory conditions the life span of *B. truncatus* was about 14 months, and that of *P. boissyi* about 19 months. The death rate was high in young forms but dropped to a low point when the molluscs were about eight months old and then rose sharply. R.T.L.

(27k) Read speculates on the limiting factor which reduces the size of tapeworms in proportion to their number, and concludes that it is not a food substance obtained from the food ingested by the host. Probably *Hymenolepis diminuta* and other small cestodes have a definite oxygen requirement which may be the limiting factor. It does not call for the rejection of the hypothesis that the metabolism is predominantly anaerobic. R.T.L.

(27l) *Ascaris lumbricoides* eggs from the pig hatch in Tyrode’s solution (pH 7·4–7·6) at 38–40°C. The addition of trypsin, sodium glycocholate, gastric mucin and minced pancreas extracts did not affect the rate of hatching. Disintegration of the shell apparently occurs from within. Usually a blister forms at one particular point and becomes a bubble which is pierced by the embryo. Less frequently there is a general thinning of the egg-shell. These effects are possibly due to the secretion of enzymes by the embryo under specific conditions of electrolyte concentration, pH and temperature. R.T.L.

27—Journal of Parasitology (cont.)

- m. FISCHTHAL, J. H., 1951.—"*Pliovitellaria wisconsinensis* n.g., n.sp. (Cestoda: Caryophyllaeidae) from Wisconsin cyprinid fishes." 37 (2), 190-194.
- n. LEVINE, N. D., 1951.—"Screening tests of organometallic and other heavy metal compounds on horse strongyle larvae in manure." 37 (2), 195-200.
- o. OLIVIER, L., 1951.—"The influence of light on the emergence of *Schistosomatum douthitti* cercariae from their snail host." 37 (2), 201-204.
- p. SCHILLER, E. L., 1951.—"Studies on the helminth fauna of Alaska. VI. The parasites of the Emperor goose (*Philacte canagica* L.) with the description of *Hymenolepis philactes*, n.sp." 37 (2), 217-220.

(27m) An unsegmented tapeworm *Pliovitellaria wisconsinensis* n.g., n.sp. occurs in *Notemigonus crysoleucas auratus* and *Hyborhynchus notatus*. The scolex is poorly defined from the neck. There is a pair of acetabular-like bothria. The cirrus opens into the utero-vaginal canal before reaching the atrium. The ovary is H-shaped. The seminal vesicle is external to the cirrus sac. There are no hooks or caudal vesicle. A key is provided for the nine genera of Caryophyllaeinae. R.T.L.

(27n) Screening tests, with 27 organometallic and other heavy metal compounds, on strongyle eggs and larvae in horse manure showed that at concentrations of 0.005 M, silver benzoate, lead dodecyl sulphonate, mercury ethyl chloride, di-*n*-propyl mercury, di-*n*-butyl mercury, di-*sec*-butyl mercury, di-isoamyl mercury and dibenzyl mercury were effective. Iso-amylarsonic acid was effective at 0.0025 M. Barium perchlorate and three aryl arsenic compounds killed at 0.01 M. As mercury compounds have a high toxicity for vertebrates their practical use is doubtful. R.T.L.

(27o) The cercariae of *Schistosomatum douthitti* emerge from *Limnaea stagnalis* and *L. palustris* during the early hours of the evening. When the light period was reversed in laboratory tests the complete reversal of this shedding was almost immediate. R.T.L.

(27p) *Philacte canagica* on St. Lawrence Island, Bering Sea, are heavily parasitized by *Hymenolepis echinocotyle*, *H. lanceolata* and *H. philactes* n.sp. This new species which has eight rostellar hooks and two sacculi accessorii has also a flared region posterior to the scolex which is characteristic, and represents a specialization in the development of an accessory hold-fast organ, similar in function and origin to the pseudo-scolex of *Fimbriaria*. The morphology of *H. philactes* renders doubtful the validity of *Drepanidotaenia*, even as a subgenus. R.T.L.

28—Journal of the Royal Egyptian Medical Association.

- a. BELAL, A., 1951.—"Bilharzial ova in adenoid tissue." 34 (1), 41-44.

(28a) In a large mass of adenoid tissue causing nasal obstruction in a boy twelve years of age, *Schistosoma* eggs [species undetermined] were found embedded in dense fibrotic tissue. R.T.L.

29—Journal of Tropical Medicine and Hygiene.

- a. ANON., 1951.—"Strongyloidiasis." 54 (1), 1-2.

30—Lancet.

- a. RAMAGE, J. S., 1951.—"Liver fluke removed from the human common bile-duct." Year 1951, 1 (6647), 146.

31—Lebensmitteltierarzt. (Supplement to Deutsche Tierärztliche Wochenschrift).

- a. SCHÖNBERG, F., 1951.—“Zur Ausbildung und Nachprüfung der Trichinenschauer.” 2 (1), 13-15.
- b. HÖVE, K. R., 1951.—“Die Behandlung trichinösen Fleisches für Unterrichtszwecke.” 2 (3), 40-42.
- c. SCHÖNBERG, F., 1951.—“Zur Frage der Invasionsfähigkeit junger, nicht eingekapselter Muskeltrichinen.” 2 (3), 45-46.

(31a) Schönberg points out that while coiled up *Trichinella* larvae, whether encapsulated or not, can normally be recognized without much difficulty by meat inspectors applying the usual techniques, the recognition of uncoiled larvae migrating or at rest in muscles needs very careful training. Inspectors should be trained on material obtained by feeding mice, rats or guinea-pigs with trichinous meat.

A.E.F.

(31b) Höve states that trichinous meat preserved in pure glycerine gives the best results when examined under the microscope and is most suitable for training inspectors in the technique of *Trichinella* examination. Infected meat pre-treated with 10% formalin gives better results under the microscope when it is subjected to thorough hydration followed by glycerine treatment.

A.E.F.

(31c) Schönberg emphasizes the fact that unencapsulated and unrolled *Trichinella* larvae are just as likely to cause infection in man as encapsulated larvae. Meat inspectors should therefore pay special attention to these early stage larvae whose recognition presents some difficulty.

A.E.F.

32—Meat Trades' Journal and Cattle Salesman's Gazette.

- a. ANON., 1951.—“Illness from eating pork. Claim fails.” 141 (3275), 451.

(32a) [Mr. Justice McNair's judgement is taken from a law report in “The Times” of 22nd February, 1951. For abstract see No. 50a below.]

33—Mémoires de l'Institut Royal Colonial Belge. Section des Sciences Naturelles et Médicales.

- a. CHARDOME, M. & PEEL, E., 1951.—“Recherches sur la répartition des filaires dans la région de Coquilhatville et la transmission de *Dipetalonema streptocerca* par *Culicoides grahami*, Austen.” 19 (6), 83 pp. [Flemish summary pp. 81-82.]

(33a) This investigation on *Dipetalonema streptocerca* in Coquilhatville comprised the examination by skin scarification of more than a quarter of the population totalling nearly 8,000. In the inland villages the microfilariae of *D. streptocerca*, *Acanthocheilonema perstans* and occasionally *Loa loa* were found. Those of *Onchocerca volvulus* were rare. Along the Congo River, for 40 km. at Coquilhatville, *Mf. streptocerca* is almost completely absent, but increases as one leaves the river for the interior. Of 687 children averaging less than ten years of age, *Mf. streptocerca* was present in 62.59%. *Mf. loa* occurred once, in a child one year old. The incubation period of *D. streptocerca* is believed to be three to four months and that of *A. perstans* nine to twelve months. The infection rate in adults with *D. streptocerca* is illustrated by the results of analyses of five villages of the interior where the incidence ranged from 92% to 100%. The highest incidence was in people of 40 years of age. *Wuchereria bancrofti* may be said to be non-existent in the indigenous population of Coquilhatville. Evidence was obtained that in the Costermansville and Ruanda-Urundi regions *D. streptocerca* probably occurs. Reference is made to the development (previously reported) of *D. streptocerca* in *Culicoides grahami*.

J.J.C.B.

34—Mitteilungen der Österreichischen Sanitätsverwaltung.

- a. RINNER, F., 1951.—“Zur Frage der Oxyuren-Therapie mit Phenothiazin-Präparat ‘Vermalon’.” 52 (5), 117–118.

(34a) Rinner considers that phenothiazine is the remedy of choice in enterobiasis: the toxic effects reported by some workers have been due either to the use of the drug in an insufficiently refined form or to a too heavy or too prolonged dosage. He recommends the administration of “Vermalon” tablets. Each tablet contains 0.15 gm. phenothiazine and 0.005 gm. phenolphthalein and roughly one tablet per 3 kg. body-weight should be given. For adults the 20 tablets should be administered in one day (in four doses of five each): for children the total dosage varies between 7 and 14 tablets and treatment should be spread over 2 days. In all cases the treatment should be repeated after 20 days. A.E.F.

35—Nature. London.

- a. BUEDING, E. & CHARMS, B., 1951.—“Respiratory metabolism of parasitic helminths without participation of the cytochrome system.” [Correspondence.] 167 (4239), 149.
 b. STEWART, D. F., 1951.—“Circulating antibodies in rats resistant to *Nippostrongylus muris*.” [Correspondence.] 167 (4239), 151.
 c. LAGRANGE, E., 1951.—“Effect of ultrasonic vibrations on filariasis of the cotton-rat (*Sigmodon hispidus*).” [Correspondence.] 167 (4241), 245.
 d. PETERS, B. G., 1951.—“The term ‘eelworm-free soil’ in plant quarantine regulations.” [Correspondence.] 167 (4244), 368.
 e. MILES, M., 1951.—“Cyst-forming eelworms on cruciferous plants.” [Correspondence.] 167 (4248), 533.
 f. FENWICK, D. W. & REID, E., 1951.—“A rapid method for estimating the density of white cysts of *Heterodera rostochiensis* on potato roots.” [Correspondence.] 167 (4248), 534.
 g. GOODEY, J. B., 1951.—“A secondary piliferous layer on the roots of *Hippeastrum*.” [Correspondence.] 167 (4255), 822–823.

(35a) Bueding & Charms have been unable to demonstrate a cytochrome/cytochrome oxidase system in *Ascaris lumbricoides* or *Litosomoides carinii*. In *Schistosoma mansoni* a cytochrome system is present but accounts for less than 10% of the oxygen consumption.

S.W.

(35b) From two sets of experiments, Stewart finds that rats which are resistant to reinfection with *Nippostrongylus muris* have circulating antibodies in their serum.

S.W.

(35c) Ultrasonic vibrations produced by an apparatus working on a frequency of 940 kc./s. were applied to cotton-rats experimentally infected with *Litosomoides carinii*. The quartz vibrator was rubbed on the wetted chests at 1.5 watts/cm² for one, two and five minutes and on others at 2 watts/cm² for two minutes. There was a marked reduction in the number of circulating microfilariae. The adult worms remained alive but the eggs containing morulae and developing embryos were granular and irregular. Several of the cotton-rats suffered from conjunctivitis and diarrhoea and died. Their death is attributed to the effect of the ultrasonic vibrations on the parasites [apparently there were no controls].

R.T.L.

(35d) Peters is concerned to show that, when a field is adequately sampled for *Heterodera rostochiensis* cysts and a single 200 gm. sub-sample of soil is properly washed and examined, a zero count of cysts is compatible with a level of cyst population capable of giving rise to symptoms of eelworm disease after two successive potato crops. In fact, with 3–5 million cysts per acre in the top 8 inches of soil, there is an even chance that no cyst will appear in a 200 gm. sub-sample.

B.G.P.

(35e) Mrs. Miles raises a fundamental issue in the field of systematics, in disputing whether in fact two species of *Heterodera* attack crucifers. She claims that there are no good morphological or biological characters for differentiating *H. cruciferae* from *H. schachtii*, and that the biometric characters in use are of doubtful validity because (i) they may be

subject to long-term variation and (ii) they are useless for identifying and separating individuals. B.G.P.

(35f) Fenwick & Reid describe a new method for estimating the number of white cysts of *Heterodera rostochiensis* on potato roots. The cysts are removed from the roots by brushing and are recovered from the debris by elutriation and subsequent flotation in zinc or magnesium sulphate. Enumeration is carried out by dilution. D.W.F.

(35g) A secondary piliferous layer, growing beneath the primary one, was found on undamaged roots of *Hippeastrum*. Most of the roots had been almost destroyed by the attacks of a new species of *Rotylenchus*, which is to be described elsewhere. J.B.G.

36—North American Veterinarian.

- a. TURK, R. D., 1951.—"Diagnosis of parasitism." 32 (4), 250-254.
- b. RUBIN, R. & BUTLER, R. L., 1951.—"Extreme parasitism in puppies." 32 (5), 341-343.
- c. JACKSON, R. S., 1951.—"Enterotoxemia and teniasis in lambs." [Questions & Answers.] 32 (5), 346.

(36a) Turk deals with the diagnosis of haemonchosis, trichostrongylosis, hookworm, lungworm and fluke infections in sheep and cattle. When parasitism and malnutrition occur together it is difficult to evaluate the damage caused by specific parasites. In Texas, haemonchosis occurs primarily in the early spring and summer and nutrition appears to have little effect in acute haemonchosis in lambs, but in old ewes the acute conditions may result from malnutrition, age or other predisposing factors. Trichostrongylosis occurs in lambs and calves late in the summer and early autumn. "Black scour" is usually present and nutrition is an important predisposing factor. In the humid areas of the south, hookworm in calves and lambs is a barn-yard or lot infection rather than one in open range animals. Lungworms occur in wet seasons particularly in the spring. Fluke infections rarely produce clinical symptoms in calves under six months old. R.T.L.

(36b) At the post-mortem examination of four puppies at Oklahoma A. and M. College, one contained 665 hookworms, the second had 1,432 hookworms, two ascarids and 90 *Taenia* sp., in the third there were 1,019 hookworms and in the fourth puppy there were 1,290 hookworms and two ascarids. R.T.L.

(36c) Jackson is of the opinion that there is no scientific evidence of any relationship between enterotoxaemia and tapeworm infection in lambs. R.T.L.

37—Onderstepoort Journal of Veterinary Research.

- a. LAURENCE, G. B., GROENEWALD, J. W., QUIN, J. I., CLARK, R., ORTLEPP, R. J. & BOSMAN, S. W., 1951.—"The influence of nutritional level on verminosis in merino lambs." 25 (1), 121-132.

(37a) Mass experimental infection with *Haemonchus contortus* and *Oesophagostomum columbianum* larvae caused a peracute fatal verminosis in merino lambs 7-8 months old kept on two different planes of nutrition, whereas similar mass infection under identical conditions caused a chronic verminosis in 10-11 months old lambs. In a second experiment an increase of the daily maize ration by 300 gm. caused a marked superiority in body-weight, appetite for roughage, haemoglobin level, fleece weight and wool fibre thickness in infected animals. Infected sheep receiving 400 gm. of maize daily were superior to non-infected animals which received only 100 gm. of maize daily. Phenothiazine was superior as a vermifuge to tetrachlorethylene emulsion or copper tartrate and copper arsenate mixture. It not only killed all the *Haemonchus* present but also removed the black stained ingesta and appeared to promote normal bile flow. In acute verminosis the immediate cause of death was pulmonary oedema. Emphasis is placed on the enormous loss of income from the reduction of fleece weights under adverse feeding conditions. R.T.L.

38—Phytopathology.

- †a. GRAHAM, T. W. & HOLDEMAN, Q. L., 1951.—“Nematode injury to tobacco, cotton, and corn in relation to populations of root-knot and meadow nematodes.” 41 (1), 14.
- †b. HARE, W. W., 1951.—“Resistance to nematodes in pepper.” 41 (1), 16.
- †c. LOWNSEBURY, B. F., LOWNSEBURY, J. W. & MAI, W. F., 1951.—“Nematodes found in New York State potato fields with different cropping histories.” 41 (1), 24.
- †d. MAI, W. F., 1951.—“*Solanum xanthii* and *S. integrifolium*, new hosts of the golden nematode, *Heterodera rostochiensis*.” 41 (1), 24.
- †e. SASSER, J. N., 1951.—“Population dynamics of nematode parasites of tobacco in certain crop rotations.” 41 (1), 31.
- †f. SASSER, J. N., FELDMESSER, J. & FASSULIOTIS, G., 1951.—“Control of golden nematode of potatoes with an organic phosphate insecticide.” 41 (1), 31-32.
- †g. STOVER, R. H., 1951.—“Some methods and problems in the study of nematode root rot of tobacco in Ontario.” 41 (1), 34.
- h. COURTNEY, W. D. & GOULD, C. J., 1951.—“Tolerance of Wedgewood iris bulbs to a hot-water-formalin treatment.” 41 (1), 40-45.
- i. OWENS, R. G. & ELLIS, D. E., 1951.—“The efficacy of certain chemical soil treatments against meadow nematodes.” 41 (2), 123-126.
- j. SMITH, O. F., 1951.—“Biologic races of *Ditylenchus dipsaci* on alfalfa.” 41 (2), 189-190.

(38a) To test the relationship between nematode population and root injury caused by *Meloidogyne* spp. and *Pratylenchus* spp. on tobacco, cotton and corn [maize], greenhouse soil heavily infested with root-knot was added to field row plots, and soil infested with meadow nematodes was added to root-rot plots. Root-knot showed little development on corn [maize] but reached a maximum on cotton and tobacco in August and September, with a decreasing *Meloidogyne* population as root decay increased. Following a regular increase of root-rot on all three crops, *Pratylenchus* populations decreased rapidly on tobacco and corn [maize] before root decay reached a maximum, but on cotton no regular trend was apparent. Some plots were fumigated with D-D mixture and ethylene dibromide, with greater effect against root-knot than root-rot. P.M.B.

(38b) Tests were carried out on 162 lines of pepper (*Capsicum frutescens*) to determine their varying response to nematodes which cause gall formation and root destruction. The varieties Santanka, Anaheim Chile and Italian Pickling showed a marked resistance, while commercial varieties of sweet pepper proved to be particularly susceptible. P.M.B.

(38c) Nematodes were screened from soil to ascertain the numbers and species present in soils where potatoes had been grown continuously for 20-30 years, in comparison with similar soils where they had been grown for only a short time or not at all. Results show that continuous cropping with potatoes is not necessarily associated with high populations of pathogenic nematodes. *Pratylenchus* sp. was found in each field sampled. Although *Xiphinema americanum* and *Criconeoides* sp. were absent from a field where potatoes had been grown continuously for 20 years they were present in the adjoining woods. P.M.B.

(38d) In testing species of Solanaceae for susceptibility, seedlings were transplanted into pots of soil infested with cysts of *Heterodera rostochiensis*, at least ten plants of each species being used. After approximately five weeks the root system of each plant showed an average of 46 immature females on *Solanum xanthii* and 13 on *S. integrifolium*, compared with 713 on *S. tuberosum*, 41 on *Lycopersicon esculentum* and 22 on *S. dulcamara*. The last three species are already recognized as hosts of this nematode. P.M.B.

(38e) A study of two-year rotation plots of cotton-tobacco, corn [maize]-tobacco, peanuts-tobacco, weeds-tobacco, oats-weeds-tobacco and tobacco-tobacco showed wide variations in the population of root-knot (*Meloidogyne incognita*) and meadow nematodes (*Pratylenchus* sp.). An increase in numbers of root-knot nematodes was found after

† Abstract of paper presented at the 42nd Annual Meeting of the American Phytopathological Society, Memphis, Tenn., December 1-3, 1950.

tobacco, corn [maize] and cotton, with a striking reduction after peanuts. A high population of *Pratylenchus* sp. resulted after corn [maize] and cotton crops, a moderate population after tobacco, and a reduction after crops of peanuts, weeds and oats-weeds. P.M.B.

(38f) The spraying of potato plants growing in soil heavily infested with *Heterodera rostochiensis* with 1% of Systox spray (E-1059) did not reduce the number of new cysts, although exposure of cysts and larvae to direct contact with the spray in petri dishes was highly lethal. P.M.B.

(38g) Experiments to determine the importance of nematodes in the aetiology of the brown root-rot complex of tobacco were undertaken, in naturally infested brown root-rot soil and in nematode-infested Vermiculite, with Green Briar a variety highly resistant to nematode root-rot, and with Harrow Velvet which is highly susceptible to the disease. It was impossible to induce a consistent symptomatological picture of nematode root-rot either in soils where tobacco has proved to be heavily infested or where corn [maize] and timothy have been grown, but the growing of timothy on Vermiculite proved fairly successful in inducing root-rot regularly under controlled conditions. The exact soil-host-environmental conditions associated with brown root-rot are as yet undetermined. P.M.B.

(38h) Courtney & Gould have examined the effects of treating various sizes of Wedgewood iris bulbs with 0.2% formaldehyde in water for four hours at 110°F. Combined with this the bulbs were dug on four different dates and stored for two, four and six weeks before treating. After treatment samples were planted in the field and treated as commercial stock. They conclude that bulbs should be dug as early as possible after danger of shrinkage is past and, in the Puyallup area, treated before late August. Treatment for three hours at 110°F. in 0.2% formaldehyde solution is sufficient for nematode control. J.B.G.

(38i) Owens & Ellis found that D-D mixture and chloropicrin at 400 and 600 lb. per acre were more effective than 200 lb. per acre in reducing the number of meadow nematodes (*Pratylenchus* spp.) and also much more effective than ethylene dibromide at 600 lb. per acre. Tests were conducted in pots and sown with maize two weeks after fumigation. Eelworms were extracted by soaking 5 gm. samples of roots in tap-water at 25°C. for 48 to 72 hours. In field experiments urea alone or combined with cottonseed meal or peanut-hull meal applied several months before planting tomatoes, reduced meadow nematodes to a low level. The treatments did not eradicate or prevent the rapid increase in numbers in subsequent years. J.B.G.

(38j) Smith reports that a biologic race of *Ditylenchus dipsaci* from Orland, California, can attack "Plant 28" a selection from the lucerne variety, Nemastan, but that populations from six other localities were impotent. Ranger alfalfa was susceptible to all seven populations. No morphological differences were found by Thorne who examined the nematodes. J.B.G.

39—Plant Disease Reporter.

- a. CONKLE, H. J. & ROTHE, C. H., 1951.—"Potato rot nematode surveys: 1946-1950." 35 (1), 3-8.
b. REYNOLDS, H. W. & SLEETH, B., 1951.—"Root-knot nematode on canaigre." 35 (1), 9.

(39a) Since 1948 the area of infestation with the potato rot eelworm, *Ditylenchus destructor*, in the U.S.A. has only increased by 55 acres. The total acreage now infested is 383 acres on 25 farms in Bingham County, and 12 acres on one farm in the adjacent Power County. The centre of the infested area is about one mile south of Aberdeen, Idaho. Control measures which are enforced by the Idaho Department of Agriculture require that all potatoes going into storage in these areas have to be kept in separate bins. When an infestation is found, all the potatoes from the infested farm are quarantined and moved to the State owned cellar at Aberdeen where they are washed, graded and sacked, and sent

in sealed trucks to dehydrators or potato chip factories. Returned sacks are fumigated. All infested fields are planted with grain and hay crops. No seed potatoes are certified for movement from the infested area. In the States of California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming the quantity of potatoes inspected in 1949 was 132,985 cwt. and in 1950, 181,702 cwt. In 1951, 2,518 cwt. were inspected in Nebraska. During these two years the only instances of infestation found were in Idaho where a few additional fields were infested but in one locality in Washington State, near Mount Vernon, Skagit County, symptoms resembling those of potato rot eelworm damage occurred.

R.T.L.

(39b) The eelworm *Meloidogyne incognita* has now been observed producing pronounced galling on the small roots and a warty elevation on the large fleshy roots of canaigres: *Rumex hymenosepalus*, a native plant of the arid areas of Arizona, New Mexico and adjoining States, and Mexico.

R.T.L.

40—Poultry Science.

- a. RIEDEL, B. B., 1951.—"Ascarid infections in broilers raised on dirt and concrete floors." 30 (1), 18-20.

(40a) The incidence of *Ascaridia galli* in broilers raised on a dirt floor covered with wood shavings to a depth of six inches was no higher than on a similarly covered concrete floor. In view of the time taken by these worms to reach sexual maturity in poultry, it is unlikely that heavy infections could occur during the twelve weeks required for the production of broilers, and severe outbreaks can be prevented by sanitary management without anthelmintic treatment.

R.T.L.

41—Proceedings of the Helminthological Society of Washington.

- a. SCHWARTZ, B., FOSTER, A. O., PETERMAN, J. E., WILBUR, Jr., J. L. & KATES, K. C. 1951.—"An epizootic of parasitic gastroenteritis in feeder lambs." 18 (1), 1-5.
- b. CORT, W. W., AMEEL, D. J. & VAN DER WOUDE, A., 1951.—"Early developmental stages of trichostrongyle mother sporocysts." 18 (1), 5-9.

(41a) An outbreak of severe helminthiasis in a flock of 8,275 lambs occurred in a feeding establishment in central Nebraska. The lambs had come from western Texas when about five months old, and were placed on new irrigated alfalfa pastures which were free from infection. Within four months 1,306 had died, only 673 were fit for market, and the remainder were dying at the rate of 100 daily. The survivors were moved to dry bare feedlots and treated with tetrachlorethylene but 1,240 died within 30 days. The animals all showed a severe anaemia caused principally by *Haemonchus contortus* and *Ostertagia circumcincta*, and acute catarrhal enteritis due to *Trichostrongylus colubriformis* and *Nematodirus spathiger*. The condition was aggravated by *Dictyocaulus filaria*. Other parasites found were *T. axei*, *Oesophagostomum columbianum* and *Trichuris ovis*, *Moniezia expansa* and *Thysanosoma actinioides*. The tetrachlorethylene treatment removed the stomach worms but did not reduce the severe trichostrongyle infections or the associated enteritis. The increase in the intensity of the helminth infections is attributable to heavy overstocking of the irrigated pastures and rotation of the lambs at intervals of two or three weeks.

R.T.L.

(41b) The very early stages in the development of the mother sporocysts of *Diplostomum flexicaudum* in experimentally infected *Stagnicola palustris elodes* are described. The germinal cells of the miracidium increase in number and each then develops into a germinal mass consisting of 2 to 4 cells resembling the group of germinal cells found in *Clinostomum reidae*. Only germinal masses were present in mother sporocysts measuring 0.24 mm. and 0.37 mm. in length.

R.T.L.

41—Proceedings of the Helminthological Society of Washington (cont.)

- c. CHRISTIE, J. R. & PERRY, V. G., 1951.—“Testing the efficacy of chemicals for killing soil-inhabiting nematodes under field conditions.” 18 (1), 9-13.
- d. STEINER, G., TAYLOR, A. L. & COBB, G. S., 1951.—“Cyst-forming plant parasitic nematodes and their spread in commerce.” 18 (1), 13-18.
- e. THORNE, G., 1951.—“Diffusion patterns of soil fumigants.” 18 (1), 18-24.

(41c) A description is given of experiments conducted in central Florida on six field plots to compare the efficacy of various chemicals in destroying the miscellaneous free-living nematodes present. Soil organisms probably indicate the comparative nematicidal properties of the chemical as accurately as plant-parasitic forms. Although the rapid build-up of saprophytic nematodes on decaying organic matter can be a disturbing factor, the method gives results quickly and does not depend on the successful growing of a susceptible crop for experiment. D-D and dichlorobutene were about equally effective in killing soil nematodes. Chlorobromopropene failed to reduce the soil nematodes or root-knot galling on muskmelons. “Soilfume 80-20” was somewhat less effective than D-D. Bis (2-chloroethyl) acetal of formaldehyde and bis (2-chloroethyl) acetal of acetaldehyde appeared capable of reducing substantially the soil nematode population but both were slightly toxic to plants.

R.T.L.

(41d) There does not appear to be any method of exterminating *Heterodera* spp. in field soil which is at present economically practicable. The expense of soil fumigation is becoming prohibitive. The avoidance of susceptible crops for several years makes no appeal to the farmer. *Heterodera* cysts have been found in numerous shipments in the course of routine inspection of plant material from foreign countries and are potential threats to crop production. There is no practical system of locating and dealing with foci of light infestations. An adequate survey would be prohibitively expensive.

R.T.L.

(41e) The principal factors governing the diffusion of soil fumigants used for the control of nematodes are soil porosity and moisture. Soils with less than 20% moisture equivalents are porous and 20 to 25 gal. per acre of dichloropropene or ethylene dibromide mixtures readily penetrate and give satisfactory control, whereas those with more than 20% moisture equivalents are more impervious and require heavier applications of fumigants. The results are recorded of experiments with fumigants in a field where 16 inches of medium sandy loam overlaid a compact calcareous subsoil. The moisture equivalent averaged 16.5% and the moisture content ranged at different levels from 12% to 15%. Spot applications of chloropicrin, D-D and Dowfume W10 were made (i) by pouring through a funnel exact quantities of the fumigants into holes punched to a depth of 8 inches and (ii) by pouring into trenches 8 inches deep. Seven to ten days later the soil profile was exposed by digging a pit about two feet deep with a vertical side at the points of application. This exposed surface was marked off in two-inch squares and sectors one inch thick were removed by trowel. Each block of soil which contained approximately four cubic inches was sifted for nemas by a modified Cobb technique. It is claimed that the procedure can be applied in the field and is more reliable than burying nemas at various distances from the point of application of the fumigant. The abundant free-living species and especially *Dorylaimus obscurus* owing to their more uniform distribution as compared with the plant parasitic species provide a better test of the killing range of fumigants, although unlike *Heterodera* and *Pratylenchus*, *D. obscurus* and *Chiloplacus symmetricus* can detect and migrate away from approaching gas. As saprophagous nemas are more resistant to fumigants than plant parasitic species, their survival after treatment is of practical use. That nemas in the top two inches of soil are not killed is evidence that fumigation is not likely to secure control of plant parasitic species for longer than one year. It was observed that ethylene dibromide has a specific lethal effect on spear-bearing nemas but not on saprophagous species. Applications of D-D at the rate of 25 gal. per acre gave an excellent kill of free-living nemas in medium sandy loam with 16.5% moisture equivalent, but in a heavy soil with a moisture equivalent of 30.6% the penetration was less than half.

R.T.L.

41—Proceedings of the Helminthological Society of Washington (cont.)

- f. PRICE, E. W., 1951.—“A new North American monogenetic trematode, *Capsala manteri*, n.sp. 18 (1), 24–25.
- g. JACHOWSKI, Jr., L. A., OTTO, G. F. & WHARTON, J. D., 1951.—“Filariasis in America Samoa I. Loss of microfilaria in the absence of continued reinfection.” 18 (1), 25–28.
- h. McINTOSH, A., 1951.—“The generic and trivial names of the species of nematodes parasitic in the large intestine of equines, commonly known from 1831 to 1900 as *Strongylus tetracanthus*. Mehlis, 1831.” 18 (1), 29–35.
- i. GOLDBERG, A., 1951.—“Life history of *Oesophagostomum venulosum*, a nematode parasite of sheep and goats.” 18 (1), 36–47.
- j. ALLEN, M. W. & JENSEN, H. J., 1951.—“*Pratylenchus vulnus*, new species (Nematoda: Pratylenchinae), a parasite of trees and vines in California.” 18 (1), 47–50.

(41f) *Capsala manteri* n.sp. from the gills of the little tunny *Euthynnus alletteratus* belongs to that section of the genus in which the testes do not invade the extra-intestinal fields. It is the smallest of these species and is the only one with a single row of unicuspid dorsal marginal spines. R.T.L.

(41g) Non-periodic microfilariae in Samoan nurses usually disappeared within five years after removal from the endemic area in Samoa to the non-endemic area of Hawaii. It follows that American military personnel infected in the Pacific during the second World War is unlikely to show microfilariae now. R.T.L.

(41h) This contribution is an effort to clarify the nomenclatural confusion which has arisen from the identification, between 1831 and 1900, of the various strongyles living in the large intestine of equines as *Strongylus tetracanthus* Mehlis, 1831. *Cyathostomum* Molin, 1861 is a valid name with *Trichonema*, *Cylicostomum*, *Cylichnostomum*, *Cylicostomum* and *Cylicostomias* as synonyms and McIntosh considers *Cyathostomum tetracanthus* (Mehlis, 1831) to be its valid type species. Agreeing with Looss and some subsequent writers that *Cyathostomum* Molin, 1861 sensu lato may be divided he recognizes *Cyathostomum* sensu stricto, *Cylicocercus*, *Cylicocycylus*, *Cylicodontophorus*, *Cylicostephanus*, *Cylicotetrapedon* and *Cylicobrachytus* and lists the species appropriate to each of these genera. R.T.L.

(41i) The various stages in the development of *Oesophagostomum venulosum* are described and illustrated. The eggs hatch in 24 hours and the infective stage is reached in 3–5 days thereafter. The infective larva is sheathed and its length including the sheath averages 0.9 mm. The intestinal cells number 32. In its protective sheath the larva can be kept alive in water for as long as 5 months. On the 3rd day after ingestion of the host the larva encysts in the wall of the small intestine. The third ecdysis occurs on the 4th day after infection. An outstanding character of the fourth-stage larva is the provisional cupuliform buccal capsule. The rudimentary dorsal cone, or tooth, does not project beyond the base of the inner surface of the capsule, and thus distinguishes this larva from that of the other oesophagostomes of ruminants. The position of the cervical papillae at the level of the beginning of the intestine is also characteristic. The fourth ecdysis occurs between the 13th and 16th day after infection. The worms are then about one-third the length of the mature adults and pass from the small intestine into the caecum. Maturity is reached in 24 to 31 days, and eggs first appear in the faeces 28 days after infection. The period of patency in single inoculation experiments averaged 117 days. R.T.L.

(41j) *Pratylenchus vulnus* n.sp. is reported as a new and important root-lesion pest of various trees and vines in California viz. black walnut, grape, fig, citrus, apricot, avocado, weeping willow, cherry, olive, peach, almond, plum, raspberry and boysenberry. It closely resembles *P. pratensis* except that in the female there are 4 incisures extending posterior to the phasmids, and striae are absent around the tail. From *P. musicola* it differs in having a longer posterior uterine branch and 3 or 4 annules on the lip region. R.T.L.

41—Proceedings of the Helminthological Society of Washington (cont.)

- k. COLGLAZIER, M. L. & ENZIE, F. D., 1951.—“Notes on caricide as an anthelmintic for cats and dogs.” 18 (1), 50–52.
- l. ELSEA, J. R., 1951.—“The histological anatomy of the nematode *Meloidogyne hapla* (Heteroderidae).” 18 (1), 53–63.
- m. TINER, J. D., 1951.—“*Dispharynx soricis* n.sp. (Nematoda: Acuariidae) from the shrew *Sorex obscurus alascensis*, and associated host pathology.” 18 (1), 64–70.
- n. MAYHEW, R. L., 1951.—“Studies on bovine gastro-intestinal parasites XVIII. Some results of feeding small amounts of phenothiazine on pure infections of the nodular worm, *Oesophagostomum radiatum*.” 18 (1), 70–77.
- o. RAUSCH, R. & LOCKER, B., 1951.—“Studies on the helminth fauna of Alaska II. On some helminths parasitic in the sea otter, *Enhydra lutris* (L.).” 18 (1), 77–81.
- p. VAN CLEAVE, H. J. & RAUSCH, R. L., 1951.—“The acanthocephalan parasites of eider ducks.” 18 (1), 81–84.

(41k) Caricide given in capsules at a dose rate of 25 mg. per pound body-weight, after 18 to 24 hours fast, removed 178 (98%) out of 182 ascarids from 11 cats. The same rate of dosage removed 9 out of 10 ascarids from a dog. The drug was well tolerated but if the capsules are crushed in the mouth there may be local irritation, salivation and occasionally emesis. R.T.L.

(41l) In a detailed description of *Meloidogyne hapla* obtained from the roots of peanuts grown in Virginia the new facts revealed are (i) the hypodermis of the female is syncytial; (ii) the somatic musculature, in the male, is platymyarian and is in 4 sectors; (iii) the oesophageal nuclei correspond to those in *Rhabditis*, *Ditylenchus* and *Aphelenchus*, and the oesophageal glands, radial nerve and marginal and radial nuclei form an appendage as in *Aphelenchus* and *Contracaecum*; (iv) the intestine fills the body-cavity and is syncytial and branched with reduced lumen in the female: in the male the lumen is simple; (v) the excretory system terminates in a highly branched tubular formation occupying most of the posterior hypodermal tissue. R.T.L.

(41m) *Dispharynx soricis* n.sp., collected from *Sorex obscurus alascensis* at Juneau, Alaska, differs from all other Acuariidae by possessing a cervical enlargement and by having a mammalian host. Its swollen anterior third, surrounded by a white substance, is embedded in capsules of fibrous tissue on the outer surface of the stomach especially in its lesser curvature. R.T.L.

(41n) When 1.5 gm. of phenothiazine was fed daily for 6 days to 4 calves with pure infections of *Oesophagostomum radiatum*, eggs disappeared altogether from the faeces of 3 of them and from the fourth after a second course. When the daily dose was fed for 14 days to 4 calves they all became negative. A daily dose of 0.5 gm. for 14 days eliminated the eggs in 3 to 14 days. Abnormal eggs appeared in 10 to 16 hours, and thereafter cultures of the faeces were usually negative. R.T.L.

(41o) The helminths collected from 3 sea otters from Amchitka, Aleutian Islands were: *Orthosplanchnus fraterculus*, *Phocitrema fusiforme*, *Pricitrema zalophi*, *Corynosoma* sp. and *Microphallus enhydrae* n.sp. *M. enhydrae* n.sp. which was present in extremely large numbers in one of the otters is 260 μ to 936 μ in length. It is differentiated from each of the thirteen species of the genus. Hitherto the genus has not been observed in other marine mammals. R.T.L.

(41p) Van Cleave & Rausch list under hosts the acanthocephala hitherto reported from eider ducks and, after commenting on previous publications, conclude that there is no evidence of acanthocephalan faunas with continental limitations. R.T.L.

42—Proceedings of the United States National Museum.

- a. DENTON, J. F. & BYRD, E. E., 1951.—“The helminth parasites of birds, III: dicrocoeliid trematodes from North American birds.” 101 (3274), 157–202.
- b. MANTER, H. W. & VAN CLEAVE, H. J., 1951.—“Some digenetic trematodes, including eight new species, from marine fishes of La Jolla, Calif.” 101 (3279), 315–340.

(42a) Descriptions are given of 22 species belonging to nine genera of Dicrocoeliidae which occur in North American birds. A table sets out their geographical distribution. Ten are new species, viz. *Lutztrema microstomum* n.sp. from *Cyanocitta cristata*; its molluscan vectors are *Bulimulus alternatus mariae*, *Deroceras reticulatum* and *D. laeve*; *Brachylecithum tuberculatum* n.sp. from *Wilsonia canadensis*; *B. nanum* n.sp. from *Pipilo erythrophthalmus* and *Zonotrichia albicollis*; *B. gruis* n.sp. from *Grus canadensis tabida*; *B. seiuricum* n.sp. from *Seiurus aurocapillus*; *B. delicatum* n.sp. from *Pipilo erythrophthalmus*; *B. moorei* n.sp. from *Bubo virginianus*; *B. exochocotyle* n.sp. from *Toxostoma rufum*; *Conspicuum icteridorum* n.sp. from *Quiscalus* spp., *Cassidix* spp., *Euphagus carolinus* and *Sturnella magna argutula*; *C. macrorchis* n.sp. from *Corvus brachyrhynchos* and with *Bulimulus alternatus mariae* as vector. As *Conspicuum* has priority over *Skrjabinus*, all the species of the latter must be transferred to *Conspicuum*. The 19 species of *Olsoniella* are recognized as belonging to *Brachylecithum* and those of *Orthorchis* as belonging to *Corrigia*. *Zonorchis* is accepted as a valid genus for certain species formerly included in *Eurytrema* and *Platynosomum*. R.T.L.

(42b) Of 17 species belonging to nine families of digenetic trematodes collected from 16 species of marine fishes mostly in the vicinity of La Jolla, southern California, eight are described and figured as new, viz. *Bucephalopsis labiatus* n.sp., *Opecoelus adsphaericus* n.sp., *Pseudopecoelus gibbonsiae* n.sp., *P. umbrinae* n.sp., *Stephanostomum californicum* n.sp., *Pleorchis californiensis* n.sp., *Diplangus tirradiatus* n.sp., *Haplospilanchnus girellae* n.sp. There is a list with a key to the 28 species of *Stephanostomum*. R.T.L.

43—Progress Notes. Hawaii Agricultural Experiment Station.

- a. FEDER, W. A., 1951.—“Yellow bud blight, a disease of *Vanda* Joaquim in Hawaii.” No. 62, 5 pp. [Mimeographed.]

(43a) A disease, hitherto undescribed, of *Vanda* Joaquim orchids in Hawaii, characterized by the blackening and the shrivelling of the spikes and their eventual death in severe infections, is shown to be due to invasion with *Aphelenchoides ritzema-bosi*. Control may be effected by (i) removal of all diseased spikes; (ii) spraying, after despiking or debudding, with 2 lb. per 100 gallons of a 25% wettable parathion solution at bi-daily intervals for two weeks and thereafter once or twice a week; (iii) removal of all weeds; (iv) propagating by cuttings from disease-free plants or by immersing cuttings in a water bath kept at 115°F. for 10 minutes. (It is recalled that parathion is a deadly poison to man.) R.T.L.

44—Research Bulletin. West of Scotland Agricultural College.

- a. GRAINGER, J., 1951.—“The golden eelworm. Studies on the ecology and control of the potato root eelworm, *Heterodera rostochiensis*.” No. 10, 72 pp.

(44a) In this Research Bulletin Grainger covers a number of varied experiments dealing with *Heterodera rostochiensis* in potatoes. Of 69 random soil samples from one West of Scotland county more than a quarter contained “cysts with contents” [this phrase seems roughly equivalent to “viable cysts”: Grainger does not count eggs or larvae]. In a pot test, dilution of infested with clean soil down to a concentration of 0.02 viable cysts per gm. still produced eelworm disease symptoms in potatoes and led to a 65-fold increase in viable cysts. Cyst counts are quoted to illustrate the spread of eelworm in soil adhering to boots, tools, machines etc. Cysts recovered from digested and composted sewage sludges, although “with contents”, failed to infest potted plants. The annual rate of increase of viable cysts varies with initial cyst density, rising to a maximum at about one viable cyst

per gm. and falling to near unity (saturation concentration) at 4 per gm. In the absence of potatoes the viable cyst population suffers an annual loss of about 30%, on which basis Grainger extrapolates to the conclusion (Fig. 7) that even an 8-course rotation would lead to an eventual increase in eelworm population. No correlation was found between total cysts per gm. and the following soil factors: phosphate soluble salts, potash, organic matter, lime requirement, and pH. Chemical analyses of healthy and infested plants reveal no eelworm effect in percentages of carbohydrate and nitrogen, but a reduction in percentage ash occurs. Numerous data are given for single and annually-repeated soil injections with D-D mixture, for which cysts per gm., white cysts per inch of root, and crop yield are used as criteria. The last two show significant effects, the crop increase covering the cost of the D-D. Residual effects of a single treatment are found in the second and third seasons, and the responses increase each year with repeated treatments. The consistently good results are ascribed to the early date of injection (July) and are interpreted in terms of D-D stimulating larvae to hatch rather than killing them (the supporting data were supplied by Shell Chemicals Ltd.). Grainger also reports good control from 0.1% solutions of mercuric chloride at 6 fl. oz. per cwt. of soil, among several non-volatile substances tested. Other substances giving fair control, such as ethylene dibromide, methyl bromide, Agrosan, and tar acid fractions were not economically practicable. Dry heating of soil (by electrodes) to 116°F. for 10 minutes had no effect on cysts, whereas heating by steam to the same temperature was fully lethal.

B.G.P.

45—Revista Brasileira de Biologia.

- a. MACHADO FILHO, D. A., 1951.—“Uma nova espécie do gênero *Atactorhynchus* Van Cleave, 1935 (Acanthocephala, Neoechinorhynchidae).” 11 (1), 29–31.

(45a) *Atactorhynchus mugilis* n.sp. is described and figured from *Mugil platanus*. It is differentiated from the type species *A. verecundus* by its larger size and by the form of the male and female genital organs.

P.M.B.

46—Revista Ibérica de Parasitología.

- a. GONZÁLEZ CASTRO, J., 1951.—“Propagación de algunas helmintiasis intestinales, por el papel moneda.” 11 (1), 3–9. [English summary p. 9.]
- b. NAJERA, L. & CONEJOS, M., 1951.—“Sobre el hallazgo de cisticercosis cardíaca en el zorro.” 11 (1), 11–21.
- c. LÓPEZ-NEYRA, C. R. & MEDINA BLANCO, M., 1951.—“Notas helmintológicas cordobesas.” 11 (1), 23–46.
- d. LÓPEZ-NEYRA, C. R., 1951.—“Los Ascaropsinae (Nematoda-Spirurata).” 11 (2), 89–223. [English summary pp. 208–209.]

(46a) Examination of dirty bank-notes in Spain shows that these represent one of many possible means of transmission of helminth eggs, especially in warm weather. One *Enterobius* and four *Ascaris* ova were found on examination of fifteen 1-peseta notes, and eight *Ascaris* ova were recovered from fifteen 5-peseta notes.

P.M.B.

(46b) Cysticerci were present in the heart of two foxes (*Pseudalopex gracilis*) in northern Argentina. The authors were unable to identify the species to which the cysticerci belonged.

P.M.B.

(46c) Dissection of 88 birds from the Córdoba district of Spain yielded seven species of helminths, of which the following three species and an unnamed microfilaria from the partridge have not been previously reported from the peninsula: (i) *Drepanidotaenia naja* (from *Chloris chloris aurantiiventris*), wrongly placed by Mayhew (1925) in *Hymenolepis* and by López-Neyra (1941) in *Dicranotaenia*; (ii) *Diorchis inflata* (from *Fulica atra*) which is probably identical with *Taenia inflata*, *D. americana* and *D. turkestanica* but distinct from *D. jacobii*; and (iii) *Diplotrriaena monticelliana*, the female of which was found in *Sylvia atricapilla*.

P.M.B.

(46d) The subfamily Ascaropsinae with its 30 species and six genera is critically studied with a number of dichotomous keys and comparative tables and illustrations. *Ascarops gracilis* (Rud., 1819), *A. africana* (Sandground), *Paraleiuris kutassi* (Schulz), *Pereiraia lassancei* (Travassos) and *Simondsia chrisoptera* (Molin) are new combinations and *Leiuris gracilis* of Vaz & Pereira, 1929 nec. Rudolphi, 1819 is renamed *Simondsia vazipereirai*. In view of the probable identity of *Simondsia paradoxa* Cobbold, 1864 with *Spiroptera cesticillus* Molin, 1859, López-Neyra renames the former *Simondsia cesticillus*.

R.T.L.

47—Science.

- a. RAUSCH, R. & SCHILLER, E. L., 1951.—“Hydatid disease (echinococcosis) in Alaska and the importance of rodent intermediate hosts.” 113 (2925), 57–58.

(47a) [The information given in this paper is similar to that published in *J. Parasit.*, 36 (6, Sect. 2), Suppl. p. 30 under a slightly different title. For abstract see Helm. Abs. 19, No. 337bx.]

48—Tierärztliche Umschau.

- a. SCHINDLER, K., 1951.—“Darmparasiten bei Pferden.” 6 (3/4), 52–54.
b. KIESCHKE, S., 1951.—“*Filaria papillosa* in der vorderen Augenkammer.” 6 (7/8), 140.

(48a) Schindler gives a detailed account of his personal experiences in treating (i) Strongylidae in horses of various ages with phenothiazine administered with syrup or jam as an electuary; (ii) *Ascaris* in young horses with Equivermon, Cuprosolvin intravenously, and “Tetraspezial” by nasal sound; (iii) Sclerostominae with Arsinosolvin intravenously. Phenothiazine was of no value in the treatment of cases of *Strongyloides westeri*, but all recovered after Arsinosolvin intravenously and “Tetraspezial” by nasal sound. As prophylactic measures the horse boxes were cleaned daily and the faeces removed.

R.T.L.

(48b) Kieschke records from Innien, Holstein, an instance of the occurrence of a *Setaria equina* in the anterior chamber of the eye of the horse. Some days later the chamber fluid became dim and the filaria could no longer be seen. Eight weeks later this cleared and after a further eight weeks the eye was almost entirely clear.

R.T.L.

49—Tijdschrift over Plantenziekten.

- a. OOSTENBRINK, M., 1951.—“Het erwtenzystenaaltje, *Heterodera göttingiana* Liebscher, in Nederland.” 57 (2), 52–64. [English summary pp. 62–63.]

(49a) Pea root eelworm disease has been found in several places in the Netherlands. Oostenbrink gives an account of the life-history of the eelworms, the disease symptoms and the results of host range trials carried out with both the pea and the clover root eelworms. His results confirm those of other workers. He considers the roles of fungi and eelworms in causing the disease and concludes that the eelworms are the primary parasites. He tested 153 varieties of pea but found none resistant and concludes that, as chemical control of the eelworm is impracticable, crop rotation is the only solution. Since wide rotations are practised in Holland, the disease is unlikely to become worse there.

M.T.F.

50—The Times.

- a. ANON., 1951.—“Illness from eating pork: claim against butcher fails.” 22nd February, p. 4.

(50a) In an action against a butcher in the King's Bench Division of the High Court of Justice, London, for alleged breach of warranty on the sale of two pork chops under the Sale of Goods Act of 1893, Section 14 (1) & (2), it was alleged that the plaintiff had contracted trichinosis and was seriously ill. No claim was made based on negligence and there was no suggestion that the defendant had been negligent. The defendant alleged that the

pork was fit for human consumption and was of merchantable quality and that, if it was the cause of the plaintiff's illness, it was due to the fact that it was uncooked or insufficiently cooked. In his judgement Mr. Justice McNair stated that he was satisfied that the chops were markedly underdone and that the inside of them at least was in such a condition that if infected the parasites would survive; that the plaintiff's illness was trichinosis; that it was caused by the pork; that it was common knowledge that pork should be cooked for a longer period than other meat and that the proper way was to cook it until it was white. In the circumstances he thought that the implied condition of fitness would be satisfied if the pork when supplied was in such a condition that, if cooked in accordance with accepted standards, it would be innocuous. No useful English authorities had been cited to him but he had been referred to Canadian and American cases which supported that view. The plaintiff's allegation as to breach of the implied conditions of fitness and merchantable quality failed.

R.T.L.

51—Transactions of the American Microscopical Society.

- a. VAN CLEAVE, H. J., 1951.—"Giant nuclei in the subcuticula of the thorny-headed worm of the hog (*Macracanthorhynchus hirudinaceus*)." 70 (1), 37-46.
- b. RIEDEL, B. B., 1951.—"A simplified method of culturing ascarid eggs." 70 (1), 57-58.

(51a) In *Macracanthorhynchus hirudinaceus* the spheroidal embryonic nuclei of the syncytium which is to become subcuticle, measure only about 0.01 mm. in diameter but these nuclei increase 500 times in diameter in the modified nuclear threads characteristic of the subcuticle of the adult. The evolutionary significance of the form changes of these giant nuclei in the Acanthocephala is discussed.

R.T.L.

(51b) Large numbers of embryonated ova of *Ascaridia galli* can be obtained by collecting mature females, washing them in tap-water and transferring them to large, culture, moist-chambers. Water and 3-5 c.c. of 2% formalin are then added to the depth of at least one inch. The cultures should be incubated at room temperature, i.e. 20°C. or over. When ova are required for experiment, some of the worms are ground in a mortar. The ova are filtered through several layers of cheese cloth and centrifuged. Prepared by this method, embryonated ova have been kept in an infective state for a year.

R.T.L.

52—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. LIE K[IAN] J[OE], 1951.—"Some trematodes from man in Indonesia." [Demonstration.] 44 (4), 357.
- b. LIE K[IAN] J[OE], 1951.—"Some nematodes from man in Indonesia." [Demonstration.] 44 (4), 357-358.
- c. WILLMOTT, S. M., 1951.—[*Paramphistomum hiberniae*.] [Demonstration.] 44 (4), 358-359.
- d. BUCKLEY, J. J. C., 1951.—"Immature *Porrocaecum* recovered from the human mouth." [Demonstration.] 44 (4), 362.

(52a) Lie Kian Joe exhibited specimens of *Euparyphium ilocanum*, *Echinoparyphium recurvatum*, *Echinostoma revolutum*, *E. lindoense* and *Plagiorchis javensis* collected from man in Indonesia.

R.T.L.

(52b) Lie Kian Joe demonstrated from man in Indonesia (i) *Trichostrongylus colubriformis*, (ii) a nodule, and a female *Oesophagostomum apiostomum* removed from a submucous nodule in the caecum, and (iii) submucosal haemorrhage in the small intestine due to *Ancylostoma duodenale*.

R.T.L.

(52c) *Paramphistomum hiberniae* which had been kept for several days in rumen fluid showed degeneration of the vitellaria and ovary from about the 8th day. The eggshells in sections of *Gigantocotyle bathycotyle* showed increased birefringence as they passed along the uterus when examined by polarized light.

R.T.L.

(52d) An immature *Porrocaecum* sp., found wriggling in a person's mouth during the night, probably came from a piece of undercooked fish.

R.T.L.

52—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- e. SCHWETZ, J., 1951.—“*Physopsis nasuta* as an invertebrate host of *Schistosoma haematobium* and *S. bovis* in Uganda.” [Demonstration.] 44 (4), 362–363.
- f. SCHWETZ, J., 1951.—“Rediscovery of *Schistosoma rodhaini* Brumpt, 1931.” [Demonstration.] 44 (4), 363.
- g. BIOCCA, E. & LEROUX, P. L., 1951.—“*Ancylostoma braziliense* de Faria, 1910 and *Ancylostoma ceylanicum* Looss, 1911, are morphologically distinct species.” [Demonstration.] 44 (4), 363.
- h. LEROUX, P. L., 1951.—“Hermaphroditism in males of *Schistosoma mansoni* carrying females in the gynaecophoric canal.” [Demonstration.] 44 (4), 363–364.
- i. LEROUX, P. L., 1951.—“Abnormalities in females of *Schistosoma mattheei*.” [Demonstration.] 44 (4), 364.
- j. McMAHON, J. P., 1951.—“Immature stages of *Simulium neavei* on freshwater crabs.” [Demonstration.] 44 (4), 365.
- k. BERTRAM, D. S., 1951.—“A film on aspects of *Simulium* and onchocerciasis in East Africa.” [Demonstration.] 44 (4), 366.
- l. GRIFFITHS, R. B. & GORDON, R. M., 1951.—“A simple apparatus designed in order to observe insects feeding on living tissue, or the penetration of helminth larvae.” [Demonstration.] 44 (4), 366–367.
- m. KERSHAW, W. E., CREWE, W. & GORDON, R. M., 1951.—“Specimens of *Loa* sp. in monkeys.” [Demonstration.] 44 (4), 367.

(52e) Mice became infected with *Schistosoma haematobium* and *S. bovis* when exposed to cercariae discharged from *Physopsis nasuta* naturally infected in Uganda. R.T.L.

(52f) From mice exposed to schistosome cercariae from wild *Planorbis pfeifferi* at Elizabethville, Belgian Congo, males, females and eggs of *Schistosoma rodhaini* were recovered. The adults were indistinguishable from *S. mansoni* but the eggs had a stout subterminal spine posteriorly and a well defined conical projection at the anterior pole. R.T.L.

(52g) *Ancylostoma ceylanicum* and *A. braziliense* are morphologically distinct. In *A. braziliense* the inner pair of ventral teeth are less prominent and not so well developed. The externo-dorsal ray is shorter, stouter and arises later. The trunk of the postero-lateral, medio-lateral and antero-lateral rays is longer and the terminations of these rays are more divergent. It is suggested that *A. braziliense* only has been recorded from man. R.T.L.

(52h) Some abnormal male *Schistosoma mansoni*, with rudimentary female organs, developed in experimentally infected mice after the fourth or fifth passage and earlier in guinea-pigs. With further passages all the males developed hermaphroditism and finally the snails could be infected no longer. There were indications that the temperature of the aquaria and the nutritional state of the vectors during the development of the miracidia played a part in the production of these abnormal males. R.T.L.

(52i) Prominent ventral suckers, cuticular spines posterior to the ventral sucker, absence or under-development of vitellaria and poor development of the gynaecophoric canal were abnormalities observed in *Schistosoma mattheei*. In the liver of a mouse infected only with females, eggs were present. In all the mice infected with cercariae from ten wild *Physopsis africana* from Southern Rhodesia only females were found in the portal system and lungs. Most of them were under-developed but others contained eggs. The miracidia from these failed to develop in *P. africana*. R.T.L.

(52j) The larvae of *Simulium neavei* [vector of *Onchocerca volvulus* in East Africa] have been found attached to fresh-water crabs living in the rapids of a hill stream in South Kavirondo, Kenya, but not on the rocks or vegetation. R.T.L.

(52l) An illuminated viewing chamber for observing biting arthropods and the behaviour of skin-penetrating helminth larvae has been designed [but no details are yet available]. R.T.L.

(52m) Adults and microfilariae of a *Loa* sp. resembling those of *L. loa* are common in *Cercopithecus mona*, *C. nictitans martini* and *Mandrillus leucophaeus* which form the principal canopy-dwelling population of the mountainous rain forests in the Cameroons. These monkeys may be the reservoir from which the filarial infections present in *Chrysops silacea* and *C. dimidiata* of the forest canopy are derived. R.T.L.

52—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- n. WOODRUFF, A. W., 1951.—“The liver before and after treatment with banocide (hetrazan) in a patient suffering from loiasis.” [Demonstration.] 44 (4), 369.
- o. WOODRUFF, A. W., 1951.—“Destruction of microfilariae of *Loa loa* in the liver in loiasis treated with banocide (hetrazan).” 44 (4), 479-480.
- p. SCHWETZ, J., 1951.—“On vesical Bilharzia in the Lango District (Uganda).” 44 (5), 501-514.
- q. SCHWETZ, J., 1951.—“Schistosomiasis at Lake Bunyonyi, Kigesi District, Uganda. (Altitude 6,300 feet above sea level.)” 44 (5), 515-520.
- r. SARKIES, J. W. R., 1951.—“Some observations on the eyes of African villagers.” [Correspondence.] 44 (5), 608-609.
- s. DELAND, C. M., 1951.—“Filariasis in Melanesia.” [Correspondence.] 44 (5), 610.

(52n) [A fuller account of this paper appears in *Trans. R. Soc. trop. Med. Hyg.*, 1951, 44 (4), 479-480. See following abstract, No. 52 o.]

(52 o) Liver biopsy after the administration of 10 mg. of banocide (1-diethylcarbamy-4-methylpiperazine) per kg. body-weight on two successive days in a patient with microfilariae of *Loa loa* showed many microfilariae surrounded by phagocytes although there were none in a liver biopsy made before treatment. From this it is concluded that the *Loa* microfilariae are totally removed from the blood and destroyed in the liver after treatment with banocide.

R.T.L.

(52p) The occurrence of vesical schistosomiasis in the Lango District of Uganda reported by Dr. J. Gordon Brown is confirmed. It is very common and was found in all the schools visited. At Aloro 43% of the 158 schoolchildren were positive. Of 32 children who had been treated with antimony tartrate 70% were positive two months later. Of 90 children who were negative in September, 55.5% had become positive by November. The molluscs collected were *Limnaea natalensis* (*undussumae*), *Planorbis tanganyicensis* (*tanganikanus*), *P. pfeifferi*, *Gyraulus* sp., *Segmentina* sp., *Pyrgophysa forskali*, *Physopsis nasuta*, *P. africana*, *Pila ovata* and *Lanistes carinatus*. Of these *P. forskali* and *Ph. nasuta* were numerous. No schistosome cercariae were found in *P. forskali* but white mice were successfully infected from *Ph. nasuta* collected at Aloro and Ayer, and adults and eggs of *S. haematobium* and *S. bovis* were recovered. Laboratory-bred *P. africana* were experimentally infected with *S. bovis*.

R.T.L.

(52q) That *Schistosoma mansoni* infection can be acquired at an altitude of 6,300 feet is established by the finding of cases among the natives of Chabahinga, near Kabale on Lake Bunyonyi in Uganda. *Planorbis pfeifferi*, *Bulinus coulboisi* and *B. mutandaensis* were numerous but *Limnaea natalensis* (*undussumae*) was rare. None of the *Planorbis* collected at Kabale-Chabahinga showed schistosome cercariae but two specimens from Muko, at the northern end of the lake, shed cercariae identified as those of schistosomes: animal experiments to determine the species could not be carried out.

R.T.L.

(52r) Sarkies has been unable to find any ophthalmological evidence of microfilarial invasion of the eyes in persons infected with *Dipetalonema streptocerca*.

R.T.L.

(52s) Deland confirms the conspicuously patchy distribution of filariasis in the villages on the coasts of Australian New Guinea and in the Solomon Islands. He considers *Anopheles punctulatus* the vector responsible for its general endemicity and *Aedes* (*Finlaya*) *kochi* as responsible for the hyperendemicity.

R.T.L.

53—Veterinarski Arhiv.

- a. DREZANČIĆ, I., 1951.—“Novi način liječenja pasa od trakavica.” 21 (3/4), 162-170. [English summary pp. 169-170.]

(53a) Large numbers of *Dipylidium caninum* and *Taenia pisiformis* were completely removed within 30 minutes from 33 dogs, with Epsom salt administered by tube into the duodenum. Dosage was at the rate of 2 gm. per kg. body-weight in a 50% solution in lukewarm water. The treatment was well tolerated and there were no toxic effects.

P.M.B.

54—Veterinary Medicine.

- a. BURCH, G. R. & BLAIR, H. E., 1951.—“A rapid test for the diagnosis of *Dirofilaria immitis*.” 46 (4), 128-130.
- b. TODD, A. C., ARBOGAST, F. M., WYANT, Z. N., STONE, W. M. & ELAM, G. W., 1951.—“On the blood picture of sheep exposed to the medium stomach worms.” 46 (4), 136-140, 142.
- c. NEWBERNE, P. M. & BURNETT, S. E., 1951.—“Cestodiasis in the chinchilla.” 46 (4), 156-157.
- d. VIGUE, R. F. & RICHARDS, C. E., 1951.—“*Dipylidium caninum* in a child.” 46 (4), 157.

(54a) Burch & Blair describe a new technique for the examination of the peripheral blood for microfilariae of *Dirofilaria immitis*. This involves the use of a solution known as “filtest” which haemolyses the erythrocytes but exerts a minimal toxic effect on the microfilariae. The efficiency of this technique is compared with that of the whole blood smear and found to be much greater; it also eliminates the need for nocturnal sampling. s.w.

(54b) In sheep in Kentucky *Ostertagia circumcincta* and *O. trifurcata* are almost universal parasites but are not as important as *Haemonchus contortus*, *Moniezia expansa*, *Oesophagostomum columbianum* and *Trichostrongylus* spp. No pure natural *Ostertagia* infection was found. Observations were made on the haematological changes in sheep and lambs after their first infection with *Ostertagia circumcincta* and *O. trifurcata*. Three yearlings, two lambs less than one month old, and one lamb five months old were used in the experiments and were each exposed to a single infection with numbers of larvae varying from 300 to 6,400. The first reaction was an increase in the number of erythrocytes (haemoconcentration) followed by macrocytic hypochromic anaemia. The recovery picture in general coincided with the first appearance of *Ostertagia* eggs in the faeces and in some cases was accompanied by a microcytic hypochromic anaemia. Five graphs are given. s.w.

(54c) Newberne & Burnett found three cysticerci of *Taenia pisiformis* during the post-mortem examination of a chinchilla. This is believed to be a new host. A coenurus identified as that of *Multiceps serialis* was removed surgically from another chinchilla. s.w.

(54d) *Dipylidium caninum* is reported from a child in Maine, U.S.A. s.w.

55—Veterinary Record.

- a. HENDERSON, G. L. B., 1951.—“A new taeniicide for dogs.” [Correspondence.] 63 (1), 12.
- b. FROST, C., 1951.—“A new taeniicide for dogs.” [Correspondence.] 63 (2), 28.
- c. LAUDER, I. M., 1951.—“A new taeniicide for dogs.” [Correspondence.] 63 (2), 28.
- d. SELLERS, K. C. & PUGH, P. D. S., 1951.—“The occurrence of ketosis in pregnant ewes, associated with parasitism.” 63 (3), 40-41.
- e. ANON., 1951.—“*Trichina spiralis* infection: failure of claim against butcher.” 63 (9), 173.
- f. FROST, C., 1951.—“An effective taeniicide in the dog.” [Correspondence.] 63 (9), 176.
- g. KIRK, H., 1951.—“Taeniocides for dogs.” [Correspondence.] 63 (10), 196.
- h. WHITTEN, L. K., 1951.—“A new taeniicide for dogs.” [Correspondence.] 63 (21), 381.

(55a) While Henderson considers that Dicestal is a very good taeniicide for puppies, kittens and cats, the large size and the great number of tablets required for a large dog make administration difficult. R.T.L.

(55b) Dicestal at the dosage rate of 0.5 gm. per 6 lb. body-weight was apparently 100% effective in a small number [not specified] of cats with *Taenia* infection. In the dog it frequently causes vomiting which can be controlled by 1-3 grains of chloretone (according to body-weight) given 20 minutes before treatment. The necessity of administering many of these large tablets to a large dog is a drawback. About one third of the dogs treated had colic and/or diarrhoea. The absence of tapeworms in the excreta following treatment makes it difficult to assess its efficacy which Frost estimates at 80% to 90%. R.T.L.

(55c) Although Dicestal (2:2'-dihydroxy-5:5'-dichlorodiphenylmethane) is a very useful taeniicide for dogs, it has not proved as effective as Biddis claimed [see Helm. Abs., 19, No. 423e]. Of 18 dogs treated at the rate of 0.5 gm. per 6-8 lb. body-weight, nine passed segments within the following two months and seven had diarrhoea after dosing. R.T.L.

(55d) Sellers & Pugh have investigated fatal cases of ketosis in pregnant ewes with heavy parasitic infections but did not obtain sufficient data to justify any definite conclusions regarding the relationship of parasitism to ketosis. R.T.L.

(55e) [Mr. Justice McNair's judgement is taken from a law report in "The Times" of 22nd February, 1951. For abstract see No. 50a above.]

(55f) Tenaline, a highly concentrated extract of areca from which the toxic properties have been removed, is a most effective way of removing tapeworms in the dog. The dog is starved for 15-18 hours, and 20 minutes before treatment 1-3 grains of chlore-tone is given. Equal parts of Tenaline and glycerin as a well mixed suspension is followed 20-30 minutes later by a soap and water enema. The worms are expelled within an hour. The amount of Tenaline is calculated at 5 minims per 4 lb. body-weight for an obese dog and 3 minims per 2 lb. body-weight for a healthy one. R.T.L.

(55g) Kirk does not agree with Frost's technique [see preceding abstract] for the administration of Tenaline in the treatment of tapeworms in dogs. The emesis, starvation and enema are great disadvantages which are avoided by giving cestarsol or nemural. R.T.L.

(55h) Five sheep dogs were dosed with Dicestal at the rate of 0.2 gm. per kg. body-weight. They were then dosed with arecoline hydrobromide. The faeces were examined for tapeworms. Two of the dogs yielded two and 55 *Echinococcus granulosus*. Three sheep dogs were given the same dose of Dicestal and a few days later were dosed with arecoline acetarsol. One of the dogs passed six *E. granulosus*. A dog was experimentally fed with 1 ml. of fresh hydatid scolices and one month later it was dosed with Dicestal. At post-mortem four days afterwards, 134 *E. granulosus*, 879 *Uncinaria* and seven *Trichuris* were found in the intestine. The results indicate that in a large percentage of cases the infection was not completely removed. R.T.L.

56—Water and Sanitary Engineer. London.

- a. TERRY, R. J., 1951.—"Behaviour and distribution of the larger worms in trickling filters." 1 (12), 432-436.

(56a) The horse leech *Haemopsis sanguisuga* occurs commonly in the filter beds and humus tanks of the Bradford Corporation Works at North Bierley and in the humus tanks at Halifax and Wakefield. They are not present in sufficiently large numbers to exert either a harmful or beneficial effect on the filter beds, but their cocoons on the filter surface are very puzzling objects. R.T.L.

57—Zeitschrift für Hygiene und Infektionskrankheiten.

- a. GÄRTNER, H. & MÜTING, L., 1951.—"Über die Infiltrationstiefe von Ascariden-Eiern im Boden." 132 (1), 59-63.
b. GÄRTNER, H. & MÜTING, L., 1951.—"Beitrag zur Frage der Lebensdauer von Ascariden-Eiern im Rieselfeldboden." 132 (3), 244-249.

(57a) Gärtner & Müting, by taking soil samples to a depth of up to 90 cm., have attempted to determine the depth to which *Ascaris* ova will infiltrate into land which has been irrigated with sewage. Samples were taken from land which had been irrigated eleven months earlier, and from land irrigated only four to six days previously. There were many more ova present in the former than in the latter: in both cases the number of ova diminished with increased depth. In no case did *Ascaris* ova penetrate into the sand beneath the cultivated soil (that is, a depth of 30-40 cm.). The authors assume that all *Ascaris* ova are retained in the irrigated land: they were unable to demonstrate ova on vegetables grown in sewage-irrigated fields, and they state that there is practically no risk to man from ova blown by winds from irrigated land. A.E.F.

(57b) Gärtner & Mütting's studies of *Ascaris* ova in land irrigated with sewage lead them to the conclusion that ova do not survive longer than $1\frac{1}{2}$ years or two winters. They consider that the irrigated soil, which is very active biochemically, dissolves the egg membrane, injures the egg and eventually kills it. A.E.F.

NON-PERIODICAL LITERATURE

- 58—BAER, J. G., 1951.—“Ecology of animal parasites.” Urbana, Ill.: University of Illinois Press, x + 224 pp., \$5.00.

Baer divides his book into five parts, each dealing with a different aspect of parasitism. In Part 1 he defines the various animal associations which are found—phoresis and commensalism, symbiosis, parasitism—and gives one or more examples of each type. In Part 2 he describes the adaptations to parasitism which are found in all the major invertebrate phyla, devoting a chapter to each phylum. In Part 3 the relationships between hosts and parasites are discussed, with particular reference to host specificity and the action of parasites upon their hosts. Part 4 is an account of recent developments in the study of the physiology of parasitic protozoa and helminths and contains a summary of the work done on their culture *in vitro*. In the last part Baer gives a short account of the possible modes of origin of the parasitic habit. There are numerous excellent illustrations [some of which lose value by being inadequately labelled] taken from various authors, a comprehensive bibliography at the end of each chapter or part, and an index. S.W.

- 59—*BERGER, G., 1951.—“Therapeutische Versuche mit dem Anthelminticum Oleum-Chenopodii-Bayer.” Dissertation, Munich.

- 60—GOODEY, T., 1951.—“Soil and freshwater nematodes. A monograph.” London: Methuen & Co. Ltd., xxvi + 390 pp., 45/-.

Goodey brings together within a single volume information about the free-living nematodes occurring in soil, fresh water and decaying plant tissues. No marine nematodes are mentioned save a few which inhabit brackish to fresh water. There is a section on general nematode structure and one on techniques. One hundred and eighty-nine genera are dealt with, and the type or a representative species of each is described and illustrated by line drawings. A list of the known species of each genus is given and a new species of *Sectonema*, viz. *S. rotundicauda* n.sp. is described. The book has a comprehensive index and bibliography. J.B.G.

- 61—*KASECKER, H., 1951.—“Über die Geschichte und Bekämpfung der Trichine.” Dissertation, Munich.

- 62—*RAIL, W., 1951.—“Infektionsversuche mit *Trichinella spiralis* zur Prüfung der Immunitätsgründe beim Geflügel.” Dissertation, Munich.

- 63—UNITED STATES DEPARTMENT OF AGRICULTURE, 1951.—“Index-catalogue of medical and veterinary zoology. Part 12. Authors: P to Qvortrup.” Washington, D.C.: U.S. Government Printing Office, pp. 3721-4054.

- 64—*ZARTNER, H., 1951.—“Untersuchungen über die Anzahl und den Verbleib von Eiern des Spulwurms '*Ascaris lumbricoides*' in der Münchener Kläranlage. (Versuche mit Eiern von Hundeskariden.)” Dissertation, Munich.

